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JPRS Report

Nuclear Developments

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JPRS-TND-89-013 *28 JUNE 1989*

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Government Cancels Proposed Space Program

MB3005145189 Johannesburg SAPA in English 1420 GMT 30 May 89

[Text] Cape Town May 30 SAPA—South Africa has shelved proposals to launch into space in spite of having the ability and technology.

The retarding factor was cost, according to the minister of economic affairs and technology, Mr Danie Steyn. At a news conference today, he said the government would encourage various sectors to keep abreast of space technology.

A committee consisting of the CSIR [Council for Scientific and Industrial Research] (SA), the Industrial Development Corporation, the Department of Posts and Telecommunications, the weather bureau, the Department of Trade and Industry, the SABC [South African Broadcasting Corporation] and the academic space research community had been appointed to keep up with space-related activities.

Mr Steyn's announcement follows an investigation by the CSIR last year. At the time there was widespread speculation the government wanted to launch its own space programme for communication, commercial, industrial and military purposes.

Qinshan Plant To Be Commissioned Next Year

HK0706045589 Beijing RENMIN RIBAO in Chinese 28 May 89 p 2

[XINHUA report by Cao Yinkang (2580 6892 1660): "Qinshan Nuclear Power Plant in Zhejiang Province To Be Commissioned Next Year"]

[Text] Hangzhou, 27 May—All the major equipment designated for the first-phase construction of China's first self-designed nuclear power plant, the Qinshan Nuclear Power Plant in Zhejiang Province, are now being installed. At present, the main pipeline of the plant is being welded. The Qinshan Nuclear Power Plant is expected to go into operation and generate electric power next year.

The first-phase Qinshan Nuclear Power Plant has an installed capacity of 300,000 kilowatts. The construction of the first-phase Qinshan Nuclear Power Plant started on 1 June, 1983. Up to now, the first-phase Qinshan Nuclear Power Plant has used some 65 percent of the total investment. Now the pressure vessel of the plant's nuclear reactor, which is the core equipment, has already been installed in the plant proper, which is situated on the bank of the Hangzhou Bay. The safety cover of the plant's nuclear reactor has already been sealed. Now the construction of two supplementary plants on both sides of the main powerhouse which houses the nuclear reactor, the construction of the powerhouse which houses the turbogenerator, and the construction of the main control tower, and the fuel plant have been basically completed.

Besides an oxygen water tank, a high-pressure heater, and so on, a titanium-pipeline condenser and a steam plant have also been built in the Qinshan Nuclear Power Plant. The construction of all the public utilities in the plant proper, including a repair plant, a refrigeration plant, a boiler house, and so on is expected to be completed within this year.

Nuclear Power Station Policy Unchanged

OW1706163989 Beijing XINHUA in English 1402 GMT 17 Jun 89

[Text] Beijing, June 17 (XINHUA)—China's policy on positively and properly developing nuclear power stations remains unchanged, Jiang Xinxiong, general manager of the China Nuclear Industrial Corporation, announced.

He was quoted by the "PEOPLE'S DAILY" today as saying that the country will continue to open further to the outside world and make foreign co-operation and exchanges and build nuclear power stations with a combined generating capacity of six million kw by the end of this century.

Jiang said construction of the Qinshan Nuclear Power Station in Zhejiang Province and the Daya Bay Nuclear Power Station in Guangdong Province is well under way despite the recent riots in Beijing and a number of other Chinese cities.

Adhering to the principle of safety and quality first, construction of the two power stations is scheduled for completion on time.

It is learned that the Daya Bay station, a mainland-Hong Kong joint venture, has two power generating units each with a generating capacity of 900,000 kilowatts. One generating unit is expected to generate power in October 1992 and the other will go into operation nine months later.

Capital construction of the Qinshan Power Station in Zhejiang Province in the first five months of this year has already fulfilled 45 percent of its annual quota.

According to the plan, the first construction phase including installation of a 300,000-kw generating unit will go into operation in December next year and its second phase of construction, with a 600,000-kw generating unit is still under negotiation.

JAPAN

Agreement Reached With U.S. Before IEA Meeting

OW3005025189 Tokyo KYODO in English 0157 GMT 30 May 89

[Text] Paris, May 29 KYODO—The United States and Japan agreed Monday [29 May] to work together for further promoting atomic power generation as a "realistic approach" to the world environmental problems.

The agreement came at separate talks U.S. Secretary of Energy James Watkins held with Japan's Foreign Minister Sosuke Uno and International Trade and Industry Minister Hiroshi Mitsuzuka before a ministerial meeting of the International Energy Agency (IEA), Japanese officials said.

Watkins and Uno agreed that joint actions by the two nations are vital to coordinate IEA policies for safe atomic power generation, the officials said.

Watkins also agreed with Mitsuzuka that development of new technology is vital to solving world environmental problems, they said.

Mitsuzuka told Watkins that he will strongly propose the need to prepare for international cooperation to cope with oil spill accidents at the IEA meeting on Tuesday, the officials said.

Minister To Urge More Use of Nuclear Power

OW2905084489 Tokyo KYODO in English 0740 GMT 29 May 89

[Text] Paris, May 29 KYODO—Japan's International Trade and Industry Minister Hiroshi Mitsuzuka will propose greater use of nuclear power at a meeting of the International Energy Agency (IEA) to be held in Paris Tuesday [30 May], Japanese Government officials said.

Mitsuzuka will make the proposal as part of a new energy policy he will present at the meeting.

Some IEA member countries oppose the increased use of nuclear power, arguing that it is unsafe. But Mitsuzuka, will call for reevaluation of nuclear power, arguing that it produces "clean energy" without carbon dioxide, one of the main causes of the greenhouse effect.

Mitsuzuka will also argue that technological development should take priority over forming regulations in order to control carbon dioxide. He will emphasize the need for technological cooperation with developing nations, the officials added.

Fukushima Nuclear Reactor Reports Leak

OW0306130389 Tokyo KYODO in English 1254 GMT 3 Jun 89

[Text] Fukushima, June 3 KYODO—A nuclear power reactor at Fukushima Second Nuclear Plant in northern Japan operated by Tokyo Electric Power Co. suffered cooling water leakage in the heat exchanger system, and workers started to stop the reactor operation, Fukushima prefectural government said Saturday.

It said the leakage was discovered at around 10 a.m. Saturday, and the workers at the 1.1 million-kilowatt boiling water reactor took steps to manually stop its operation. The reactor will stop by 6 a.m. Sunday, it said.

Tokyo Electric Power said the reactor trouble is the first such accident to happen at its nuclear power plants.

Saturday's accident increased to six the number of Tokyo Electric Power reactors which have been crippled or suspended for periodic checks.

The Tokyo-based electricity supplier has two plants in Fukushima Prefecture and one in Niigata Prefecture with a total of 11 reactors.

NORTH KOREA

Nuclear Weapons Capability Discussed by ROK Paper

SK0406002589 Seoul THE KOREA HERALD in English 4 Jun 89 pp 2, 5

[By staff reporter Kim Hak-kyong]

[Text] Is North Korea capable of producing nuclear weapons with its own technology?

A partial answer to this intriguing question came recently from Naewoe Press, a news service specializing in North Korean affairs, which answered with a definite, "yes."

Quoting a reliable source in Seoul, Naewoe reported that Pyongyang's nuclear reactor project in Yongbyon was first learned by the United States four years ago, but it was only some months ago that U.S. satellite cameras detected a mysterious extra facility there—i.e., the reprocessing plant.

Earlier last April, a foreign news dispatch from Brussels said that a British member of the European Parliament warned other European nations that North Korea may have launched out on the initial stage of a project for the production of nuclear weapons, taking advantage of such a reprocessing plant, which they said could be the first step toward the production of nuclear weapons.

A reprocessing plant, according to nuclear specialists, would extract from the spent nuclear fuel rods of a reactor the unused uranium and plutonium by-product which could be used for fueling different types of reactors for the production of nuclear weapons.

According to Naewoe, a 30-megawatt reactor would be capable of producing about 7-8 kg of weapon-grade material over an extended period, and that would be sufficient to produce a 1-kiloton bomb.

After learning of the Yongbyon reactor, the Americans reportedly tried to ascertain the usage and capacity of the reactor but no tangible results have been obtained.

Instead, the Americans were reported to have approached the Soviet Union to register their concern, the news service said.

As a result, the Soviet pressured North Korea into ratifying the Nuclear Nonproliferation Treaty on Dec. 12, 1985. But Pyongyang has yet to sign a full safeguard agreement with the Vienna-based International Atomic Energy Agency (IAEA). So far, only two Soviet-supplied 2-4 megawatt research reactors, which produce radioactive isotopes for medical and industrial purposes, come under the agreement.

Despite these and other reports coming from various information channels, there is a good deal of skepticism among nuclear specialists here over North Korea's nuclear weapons-producing capability.

They say that while it may have a certain expertise in nuclear engineers, Pyongyang would probably require Soviet assistance to produce the natural uranium for use in the reactor.

It is not clear if North Korea has uranium deposits of its own, and it is very hard for North Korea to obtain the costly mineral or plutonium on the world market.

Other sources said that North Korea almost certainly does not have the skill and the sophisticated technology necessary to reprocess spent fuel.

"The Soviet Union or China is not be willing to help Pyongyang develop a reprocessing capability," a North Korea watcher said, but he did not rule out the possibility of North Korea secretly acquiring technical cooperation from Third World countries which share the same interests.

The Naewoe Press noted that the Nuclear Power Industry Ministry was established in North Korea in December 1986 and the Soviet Union has agreed to supply the country's first nuclear power station to Pyongyang.

The atomic power plant with an installed generating capacity of 1,760 megawatt is scheduled to be constructed in Hamgyongbuk-to bordering both China and Soviet Union, the news service earlier reported.

"No matter what the Yongbyon facility will be used for, apparently North Korea has been directing concerted efforts to develop atomic energy technology since December 1985 when it concluded an agreement with the Soviet Union on the construction of a nuclear power plant in North Korea," a North Korea watcher concluded.

SOUTH KOREA

Research Team Recommends More Nuclear Power Plants

SK3105033589 Seoul YONHAP in English 0257 GMT 31 May 89

[Text] Seoul, May 31 (YONHAP)—South Korea needs to build 53 nuclear power plants with a production capacity of 1 million kilowatts each plus 65 thermal power stations by the year 2031 to meet energy demands, a government-sponsored research team said Wednesday.

The report assumes a constant energy production ratio of 40 percent nuclear, 40 percent bituminous coal and 20 percent hydroelectric and other sources.

In a symposium on the outlook for Korea's nuclear energy utilization in the 2000s, some 400 energy experts and policy-makers listened to a paper outlining a one-year research project conducted by 46 scientists from 11 research centers.

The researchers stressed design standardization to enhance the social image of nuclear power and make it more economical, and suggested that construction near the sea would prevent protests.

They said reactors by the year 2006 must be mainly advanced pressurized water reactors supplemented by candu heavy water reactors.

They urged the development of new technology to maintain the safety of nuclear power stations over the long term because of the far lower pollution problem than other energy sources.

CZECHOSLOVAKIA

Austria Demands Halt to Building Power Plants

AU3005090889 Vienna DIE PRESSE in German 30 May 89 p 2

["ag" report: "CSSR Power Plants: New Ill Feelings Between Prague and Vienna?"]

[Text] Prague/Vienna—The CSSR's projects for power plants threaten to cause new ill feelings between Prague and Vienna. At the beginning of the first conference of environment ministers of CSSR neighboring states in Prague, Austrian Minister Marilies Flemming urgently appealed to the host country not to build the projected nuclear power plants at Temelin and Mochovce near the Austrian border. Flemming said that she can imagine that, if such were to be the case, Austria would grant financial support. Obviously as a reaction to this, a press conference of the CSSR nuclear energy commission was announced for today.

A delegation of Austrian environmental protection activists, who wanted to hand over a petition against the Slovak Gabcikovo hydroelectric power station on the Danube, was turned away at the CSSR Embassy in Vienna yesterday [29 May]. The paper that was slipped through under the fence was immediately crumpled up and thrown back.

Papers on Disagreements About Nuclear Program

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[Editorial Report] Prague MLADA FRONTA in Czech on 31 May on page 2 carries a 500-word "mer"-signed report on a press conference given by Stanislav Havel, chairman of the Czechoslovak Nuclear Energy Commission, and Jozef Keher, Federal Government commissioner for the construction of nuclear power stations, in Prague on 30 May on the CSSR nuclear program. The future of Czechoslovakia's nuclear program is also the subject of a 3,200-word article by Engineer Stanislav Havel, doctor of sciences, and Engineer Vaclav Stach, candidate of sciences, in Prague RUDE PRAVO in Czech on 1 June on page 4, entitled "The Main Path in the Development of the Power Generating Industry," and of a 500-word CTK report on a joint session of the Federal Assembly's Planning and Budget Committees, carried by RUDE PRAVO on 1 June on page 2.

Reporting on Stanislav Havel's press conference, the MLADA FRONTA reporter notes that "S. Havel familiarized journalists with the great demands placed on the operators of our nuclear power stations and rejected fears of risks. He also expressed a critical opinion on some untrue pieces of information that have appeared in parts of the Austrian press."

The reporter goes on to say: "The MLADA FRONTA correspondent's question concerned the more general aspects of the plans of Czechoslovakia's nuclear power industry. According to some data, the investment cost of the construction of a nuclear power station in our country is three times higher than in the United States, which has the highest production costs of all Western countries. It arises from this and other facts that the contemplated program for the development of the nuclear power industry would 'devour' up to the year 2010 one-half of industrial investments and, consequently, also immense capacities and resources from other spheres of the economy. The forecasters' deduction from this is their fear that, if this trend is complied with, the ways toward the essential restructuring of our economy will be blocked. We were interested in S. Havel's position concerning this danger.

"S. Havel replied that, according to some criteria, our nuclear power stations are more expensive to build than Western ones and, according to other criteria, the costs are comparable. The costs are, aside from other factors, partly a result of our more conservative approach to passive protection. We use more concrete and steel and, consequently, construction is more labor-intensive. Despite this, it is necessary to see that electricity in nuclear power stations is generated at a lower cost than in conventional power stations. S. Havel also delivered his opinion on the conclusions of the comprehensive forecast up to the year 2010 drawn up by the Forecasting Institute of the Czechoslovak Academy of Sciences. He said that some data in it do not correspond to reality and that others are imprecise or derived only theoretically and impossible to prove technically. We do not, however, reject the study, he added. Let us only treat its conclusions as one of several solutions, put forward by one institute. We welcome the evolution of further similar documents, from the sum total of which a more objective view will crystallize, more objective with regard to the prospects of our nuclear power industry."

The Forecasting Institute's study is also mentioned in a 500-word CTK report on the 31 May joint meeting in Prague of the Federal Assembly's Planning and Budget Committees, carried by Prague RUDE PRAVO in Czech on 1 June on page 4, under the headline "Economic Performance Is Declining." The relevant passage reads: "Replying to deputies' questions, CSSR First Deputy Premier Bohumil Urban noted, among other things, that the construction of nuclear power stations primarily should contribute to a reduction in the mining of sulfurous brown coal, the burning of which is the cause of the most serious ecological problems today, and that the view that they are being built in order to export electricity is erroneous. Referring to the significance of studies by the Forecasting Institute of the Czechoslovak Academy of Sciences, he remarked that their contribution to the sorting out of views is undeniable but that decisions on specific economic measures fall to the State Planning Commission."

The article by Stanislav Havel and Vaclav Stach in the same issue of RUDE PRAVO deals with the contribution of nuclear power to the improvement of the atmosphere. The authors emphasize that, without nuclear

power plants, emissions of sulfur dioxide on Czechoslovak territory would be higher by one-third in 1995 and by two-thirds in 2005 than they were in 1980, and that Czechoslovakia would therefore be unable to meet its international commitment to reduce sulfur dioxide emissions 30 percent. Without making any direct reference to the Forecasting Institute's study, Havel and Stach argue that countries with a high proportion of nuclear power (France, Belgium, Sweden, Finland) have low and stable energy costs, which contributes to the competitiveness of their products, has a positive impact on their balance of payments, and has helped them eliminate atmospheric pollution. The authors also contend that, in pursuing the reduction of sulfur dioxide emissions, "it would be more logical to accelerate the nuclear program" than to desulfurize coal-burning power stations because, whereas the technology of nuclear power stations has been mastered in Czechoslovakia, the desulfurization of conventional power stations is still only being tested. They also point to the high cost of the desulfurization equipment (Kcs5 billion for the two units of the Tusimice II power station, for example, which is 38 percent of the cost of one 1,000-megawatt unit of the Temelin nuclear power station), to the fact that the service life of desulfurization equipment is one-half that of nuclear power stations, and to the fact that the problem of the equally harmful nitrate emissions (which nuclear power stations would eliminate) remains unsolved. Havel and Stach say that they cite these arguments not to question the importance of desulfurization but because "one of the main arguments on which views about the need to slow down the construction of nuclear power stations rely is their investment cost or, rather, the strain in the balances of investment resources. It is becoming apparent that the alternative, an ecologically 'clean' production of electricity, requires approximately the same investments. At the same time, the "cleanliness' of desulfurization is relative because, given an effectiveness of 90 percent, 10 percent of sulfur dioxide is still discharged into the atmosphere."

In conclusion, Havel and Stach deplore that the importance of preventing the "devastation" of the environment, which is an important contribution of nuclear power, "has so far been neglected when it came to specific decisions on the implementation of the nuclear program" and warn that any slowdown in the nuclear program would cause ecological damage.

Nuclear Program Criticized in RUDE PRAVO

AU0206100589

[Editorial Report] Prague RUDE PRAVO in Czech of 31 May on page 2, under the headline "We Pursue a Common Goal," publishes replies by the heads of foreign delegations who participated in the 2-day Prague conference on environmental protection in Central Europe, to questions of RUDE PRAVO correspondents Igor Sirota and Zdenek Vavra on their assessment of the "contribution" of the meeting. The interviews were made in Prague on 30 May.

In their replies, the government members in charge of environmental protection of countries bordering on Czechoslovakia emphasize the benefits of crossborder cooperation in environmental protection and the need for coordinated environmental policies. They praise CSSR Premier Adamec's initiative to convene the conference as well as the opportunity to frankly discuss all issues. Some of them also recommend specific issues for further negotiations by experts.

One statement, that by Marilies Flemming, the Austrian minister of family affairs and environmental protection, is critical of Czechoslovak environmental policies. Flemming is quoted as having said: "I am content with the results of the conference, not only because we have agreed here on a joint course of action but also in view of the fact that I was able to speak about the great fears of the Austrian population in connection with the operation and construction of Czechoslovak nuclear power stations in the vicinity of our borders. Austrian citizens are of the opinion that gaining electric power from nuclear power stations is a wrong way, a way that belongs to the past. Instead, we should now invest financial means in future-oriented forms of power generation, such as the use of solar energy or biomass. We wish the CSSR had not built the Temelin nuclear power station. I repeat that we have discussed these issues very frankly. The Republic of Austria is advancing the offer of its help, also as regards progressive technologies of which we avail ourselves."

An indirect criticism of Czechoslovakia is contained also in the statement by Klaus Toepfer, FRG minister for the environment, nature conservation, and reactor safety. Asked which environmental issue he regards as particularly important, Toepfer says: "In the future, we consider it especially necessary to negotiate on questions concerning the pollution of the Elbe River. Together with the CSSR and the GDR, we must take concrete measures, including cooperation in preventing and removing consequences of accidents on this river."

GERMAN DEMOCRATIC REPUBLIC

Reactor Safety Discussed With Great Britain

AU0106104389 East Berlin NEUES DEUTSCHLAND in German 27-28 May 89 p 5

[Text] London (ADN)—For several days State Secretary Prof Dr Georg Sitzlack, president of the GDR State Office for Nuclear Safety and Radiation Protection, held technical talks in Great Britain at the invitation of the British Government. In the course of his visit, which was concluded on Friday [26 May], state offices and scientific and industrial institutions briefed him on the level of nuclear technology, the development of nuclear reactors, plant safety, and radiation protection. Prof Sitzlack explained the complex and comprehensive state control

system for the use of nuclear power in the GDR, the objective of which is to guarantee nuclear safety, protect man and the environment, and prevent the abuse of nuclear power.

The partners in the talks agreed that in the use of nuclear power the greatest priority has to be given to the safety of the plants and the protection from danger caused by radiation. The further development of nuclear power plant technology is very important because nuclear power will also play a major role in energy supply and in improving environmental conditions in the future. Referring to the constructive talks, Prof Sitzlack told ADN that, considering the necessity of making nuclear plant operations increasingly safer all over the world, international cooperation has to be further deepened within the International Atomic Energy Authority, as well as between the states using nuclear energy. This especially applies to Europe where, compared to other regions, nuclear power plants are most concentrated, he stated.

Minister Riesenhuber Discusses Reactor Safety

AU3105072289 East Berlin NEUES DEUTSCHLAND in German 29 May 89 p 2

[Excerpts] Berlin (ADN)—State Secretary Professor Georg Sitzlack, president of the GDR State Office for Nuclear Safety and Radiation Protection, held talks with Heinz Riesenhuber, FRG minister of research and technology, in Berlin on Sunday [28 May]. On the basis of the agreement on radiation protection, signed on 8 September 1987, the partners in the talks discussed the continuation of efforts to improve the safety of nuclear reactors that were started together with the USSR. These efforts are focused in particular on scientific-technological requirements regarding the safety of pressurized water reactors, the technical means for ensuring safety, computer programs for risk analyses to prevent accidents, and supervision of the state of components in nuclear reactor.

State Secretary Sitzlack and Minister Riesenhuber agreed that the deepening of international cooperation in the use of nuclear energy plays an important role in the interest of the reliable operation of nuclear reactors and thus in the interest of the comprehensive protection of man. [passage omitted]

During a visit to the Solid State Physics and Materials Research Central Institute of the Academy of Sciences in Dresden, Director Prof Johannes Barthel explained to his visitor the work on developing new materials, and technologies for producing them. In this connection, Minister Riesenhuber advocated the development of cooperation between the Dresden institute and corresponding institutes in the FRG on the basis of the agreement on scientific and technological cooperation signed between the two states on 8 September 1987.

HUNGARY

Paks Nuclear Waste Dump History, Status Reported

Public Concern, Action Described

51003006 Budapest NEPSZABADSAG in Hungarian 26 Apr 89 p 7

[Article by Tamas Ungar: "This Is How Far We Got; or About Ofalu, Without the Hope for Completion"]

[Text] The secret of good drama is that each actor holds his appreciable truth. The dispute between Paks and Ofalu does not lack the basic elements of good drama. Except for the fact that Paks and Ofalu do not want to write drama.

By now, the conflict between the two main actors appears irreconcilable. Having hired its own experts as the sole authority, Ofalu does everything it can against the nuclear waste dump. Their final argument to show why they do not want a nuclear waste dump is "just because."

I would like to ask anyone who believes that this response leads to the world of playgrounds: would you like to have a nuclear waste dump a few kilometers from your home, near your children? But the fact is that if we have a nuclear power plant there has to be a nuclear waste dump.

Secrecy at the Beginning

The avalanche begin to slide in early 1988. Until that time the nation did not even know that there exists low and medium intensity radioactive waste. The people from Ofalu did not have an idea either. They only knew that something is being built on the high ground near the settlement. The council chairman received letters on this subject marked "secret."

Beginning in 1985 they had a new council chairman. He reviewed the inherited documents, but for a long time he did not become suspicious about this case. He thought it was complete. And then, as he began to learn his official chores and took notice of the odd circumstances of the licensing process he felt he had to do something. Because, after all, it cannot be explained why people who live there could learn only about a completed establishment. The ice broke up in February 1988. Specialists from the Paks Nuclear Power Plant Enterprise informed the residents of Ofalu at a people's academy presentation of the planned nuclear waste dump. The local people knew that there was no more to be found out. Upset, they listened, questioned and mocked the spokesman with acquiescence. It occurred to them already at that point: What if they would find their own experts, people whom they could fully trust, let them render an opinion as to the suitability of the area. At a village meeting in March 1988 it became final that the villagers too had the right to

take advantage of this possibility, and jointly with the county council's building department they hired a group of seven scientists. That group was designated as the "independent expert committee."

I do not want to go into details about the unusually complicated licensing process that exists relative to nuclear waste dumps. Suffice it to say that the license to establish a nuclear waste dump is issued by the State Public Health and Epidemiology Superintendency in due consideration of opinions rendered by expert authorities. One expert authority is the building department of the county council. Accordingly, local people have no opportunity to express their views in the process. At the same time this also means that the licensing authority does not necessarily have to consider the opinions of experts hired by the people of Ofalu. But in this instance the situation was somewhat different, because one of the individuals who wanted to establish an independent expert committee was one of the expert authorities in the proceedings of first instance.

The independent expert committee reported its finding in April 1988. The primary focus of their analysis was the question of whether the area above Ofalu could function as a natural protective barrier. In other words: In the event that the technical protective barrier of the nuclear waste dump deteriorates for some reason, will the natural conditions at the site prevent the leakage of radioactive material. (The nuclear waste dump was planned to have four redundant protective barriers. Three of the four barriers are artificial. The waste would be brought here in barrels cast in cement, then each layer of barrels would be cast in reinforced concrete in a huge tub. Accordingly, the main material the artificial barriers are made of is concrete. Concrete has a 100-year history, but the nuclear waste dump must withstand nature's attacks for 600 years. Who could say with absolute certainty what concrete is capable to withstand in 200 or 300 years?)

The opinion of the independent expert committee was brief: The area is not suited and it cannot be rendered suitable.

According to the original plan, differences of opinion between the two expert groups were to be debated. Without an agreement, a neutral committee assembled for this purpose would render a decision.

Clash Between Experts

I have yet to understand how the dispute started. On this important day the scientists were unable to agree for two hours on the location of their meeting. The experts from Paks did not leave the power plant because it was comfortable there. The experts from Ofalu did not enter the power plant because they were concerned about uncertainty. This prelude was extremely undignified and ridiculous. Thereafter the debate began at the Paks City Council and science appeared to provide common ground for the two groups. Theories, hypotheses, opinions and emotions clashed for nine hours. The two sides moved closer to each other. For example, the experts from Ofalu yielded in regard to the magnitude of a possible earthquake, while in response to the debate the experts from Paks thought of sizing the concrete monstrosity so as to withstand a stronger earthquake. In order to ensure the stability of slope the location of the entire structure was moved 30 meters away. I will not detail further these technical issues which may be complicated or incomprehensible to outsiders. The essence is that having reached item 27, the Paks experts thought they were able to convince the independent experts. But in summing up the debate a different conclusion was reached. The independent experts continued to regard the area as unsuitable.

The debate which was not devoid of emotions, but which nevertheless remained at a scientific level, suddenly changed into humiliating personality conflicts. "You are saying no because you get paid to say no," one side raised the suspicion. "And you get paid for saying yes," the other side retorted.

Lacking agreement, county council building department head Lajos Kovacs did not grant the expert authority's approval and as a result the State Public Health and Epidemiology Superintendency refused to grant a construction permit.

Delays

Paks appealed. In this round the Superintendency will issue a permit if all expert authorities approved. In the opinion of the county council, however, this was unnecessary. Instead the Environmental Protection and Water Resource Management Ministry should act as the expert authority and grant approval. For the time being the licensing process coasted along. Results were expected in August or in September. The expert opinion from a committee of the Academy was also delayed. After several changes they promised to deliver the opinion on 31 March, but then it turned out that before rendering an opinion the material will be submitted to the Academy presidium on 2 May, and only thereafter may public opinion learn the results. Although the position taken by the Academy does not influence the issuance of a building permit in theory, it would be difficult to disregard the decision of a committee of our highest scientific institution regarding the debate between the experts from Paks and Ofalu.

Or could it be disregarded? At the initiative of the Hungarian Democratic Forum [MDF] local people organized a demonstration. On 7 May they would march from Ofalu to the planned site of the nuclear waste dump. They would protest something that is still undecided. Thus the demonstration would convey the idea that the people of Ofalu have no confidence in the purity of the expert opinions.

The experts from Paks eroded the confidence of the people of Ofalu. For this reason, the residents of this Baranya County settlement suspect that they were mislead by the information provided, and in regard to compensation they suspected bribery. In what way did Paks come to deserve this lack of confidence? This was not only the result of initial secrecy. Information provided to local residents was not flawless even in later days. No one, except those from Paks, had access to important expert opinions, such as those of the International Atomic Energy Agency and the Hungarian State Geological Institute. Still today, Nuclear Director Laszlo Marothy regards the debate between the two scientific groups as if an agreement had been reached, and considers rejection by the building department of the county council, in its capacity of being an expert authority, as arbitrary. This is the same what he told our newspaper in those days. On the other hand, university professor and departmental chairman Dr Tibor Szederkenyi, chairman of the independent expert committee still claims that "they were not convinced, even though they gave in on some partial issues." Taken as a whole, they were maintaining their original view, moreover, in light of new research results they felt that their original views were confirmed. Those from Paks claimed that they should not be blamed for delays. New authorities entered the picture. Lacking experience, they were grabbing for straws to hold onto, and in picking up the pencil the decisionmakers' hands shook—at least this is what the nuclear director has to say. In contrast, those from Paks believe that at first the Ministry of Environmental Protection and Water Resource Management did not grant approval in its capacity as the expert authority, yet, this refusal was not fatal to the cause supported by those of Paks because the Ministry gave the nuclear power plant one more chance [to prove the suitability of the site].

How come the people of Ofalu are so well informed? For quite some time this settlement has not been an assembly of villagers who are easily persuaded because they are tired by nightfall and are willing to acquiesce. The social committee and friendly circle that came about in relation to the nuclear power plant has well trained, politically savvy members. Their leader is council chairman Ferenc Wekler. As the chief obstacle in the eyes of those from Paks he is increasingly becoming an image.

Wekler

Ferenc Wekler, age 30, was nominated to become a member of the Mecseknadasd council in the 1985 elections. In those days the local young man taught at the Janus Pannonius University of Sciences at Pecs. He was nominated spontaneously, and, to put it in polite terms, was not supported officially. Nevertheless he won the election and to top it off, he became the chairman of the common council of three villages: Mecseknadasd, Obanya and Ofalu.

The main goal of the tall, attractive, well spoken chairman who ties together his arguments with crystal clear logic was to demonstrate his own power to the three settlements. The people who live in those three settlements clearly demonstrated what they were capable of accomplishing. More public buildings were erected in these villages in the course of three years than in the previous four decades.

Accordingly, Wekler spends his time, to use his words, not only with the coordination of protest against the nuclear waste dump. He is never short on plans. At present he is thinking about exporting bio products for convertible currency. The psychological part of the business is convincing: The fruits produced by the German speaking population of Mecseknadasd "which have not seen chemicals" would be sold on Austrian and West German stands. Wekler's name was mentioned prior to the vote for the office of county council chairman. The suggestion was without foundation however, because he was not a member of the county council. On the other hand the Mecseknadasd council chairman [Wekler] makes no secret of his view of county councils: They are unnecessary bodies, condemned to death.

Is this all not closely related to the nuclear waste dump? Of course it is. The people from Paks found a tough opponent in the person of the Ofalu council chairman. They are confronted with a tactical, managerial type leader who does not necessarily want to conform with higher level instructions, and one, who (because of his "hinterland") is not concerned about losing his position. He is one who never seeks the grace of the press, nevertheless in one way or another always gets publicity, one who is clever in keeping secrets if necessary, and one who with his ideas can create tension in a way so that no one can turn against him based on well founded arguments.

Time Factor

Whom does the delayed decision benefit? Ninety-nine out of 100 persons in Ofalu will instantly respond that Paks benefits. Most people suspect that the "energy lobby" and its several "coalition partners" will work on the scientists and on those who issue permits. A permit would have been issued a long time ago had there been no dispute over the suitability of the site, according to the people from Ofalu, but the site is not suitable, therefore they are now looking for a solution to declare the site suitable.

As I mentioned before, from among 100 people in Ofalu there is one who believes that time works in favor of Ofalu. Ferenc Wekler sees it this way. By now the people of Ofalu reject the nuclear waste dump as one man, and this required a year, according to the protest coordinator. The people of Feked and Vemend are similarly united. The unproductive passing of time, the constant slippage of decision deadlines strengthened the confidence and the sense of opposition of these villagers.

Certain news items further affirm these sentiments. To date adverse information is pouring out as a result of Chernobyl. Since then a nuclear submarine has caught fire and sank. Although on both sides of the world they stress that the fire had nothing to do with nuclear energy and that there is no cause for concern, people are still reminded of the fact that the submarine sank, and that today it rests at the bottom of the sea unsupervised.

I am reading again and again about Chernobyl, Meanwhile I recall the words of the Paks power plant director. At the time Imre Pozsgay paid a visit in Paks, Jozsef Ponya had this to say about the societal view on nuclear energy: "This branch of industry cannot survive another Chernobyl." A statement like this assures (may assure) many. But it is not certain that all fledgling political forces want some of these assurances.

Because Hungarian society finding its way back found a solid clashing point. As a result of a specific issue, in Ofalu one may form an opinion about virtually every conflict laden phenomenon and the near past which crippled our present in Hungary. In assessing strengths one may find allies, one can strike at the depersonalized state, at unpreparedness and at the intertwining of concepts advanced by the state. And one can also win, which serves as a stimulant for further battles. And if one cannot win, if, the official machinery succeeds by forcing its will, so they say, one may forge a victory of such defeat because one could foresee that this country, which is undergoing democratization was capable of accomplishing only this much, for the time being. In other words: there is yet another proof to show that the machinery is in need of substantial repair.

But Then Where?

I am asking one of my acquaintances in Feked whether they reject the nuclear waste dump. (Since thus far I heard mostly from the people of Ofalu.)

"We are afraid of it," says a 60-year-old man. "There were of course some who hoped to obtain some kind of a walk up and down job and supported it. The majority is scared, however."

[NEPSZABADSAG] Who could convince you that the establishment presents no danger?

[Man] Perhaps only our own experts.

[NEPSZABADSAG] No one else?

[Man] No one. The three top men of this country could come here, and we would not believe them.

He pauses, as if expecting another question.

[Man] Before they would have said: This thing will be built here, and that's it! No one could appeal. And today? They cannot reach an agreement. Mister, is this possible? Have we gotten this far?

This far. And today this is more than the "that's it" was before. But aside from that, we still must find a place for medium intensity nuclear waste. But where? According to the people of Mecseknadasd the waste should go to Tolna County. There they have digested the idea of a nuclear power plant already, they will "swallow" also its waste. An engineer from Paks finds that placing the waste dump in the immediate vicinity of the nuclear power plant is conceivable. The natural barrier would be built artificially, by exchanging soil. They have done this already when they built the nuclear power plant. If, from a geological standpoint the site is appropriate for the power plant, it should also be appropriate for the waste dump. Except for the fact that the power plant will work for 30 years (perhaps 10 or 20 years longer), but the nuclear waste dump must guard its hazardous burden for 600 years. This is the way radiation experts reject the suggestion which at first sounds logical.

Many arguments support [depositing the nuclear waste in] Puspokszilagy. Expansion of the already existing nuclear waste dump seems logical and promises to be cheaper, but the distance, the routing which requires the crossing of the Danube present a strong counter argument altogether (True, in other countries they transport radioactive waste farther, and on longer journeys by water.) Incidentally, word about the joy of Puspokszilagy residents is not unequivocal either.

What if the experts would examine new sites? They do not even want to hear this question asked in Paks. Once again hundreds of millions would have to be spent for this purpose. For many, however, this counterargument is the least acceptable. Multiples of this amount have flown (and are flowing) down the drain annually through the devlish maze of the Hungarian economy which cannot be torn away from the nourishing source of old mistakes. I also heard of a concept according to which a search for four or five sites is possible. Our world is filled with unprofessionally stored hazardous waste. We have increasingly more reason to be afraid of the impassioned revenge of poison dumped on arable land. If in the next two or three years they would search for several sites like this, they would obviously find place also for the storage of other hazardous waste. (Such research would not burden Paks, of course.) Lack of time could not be an argument against such research. Invoking lack of time would constitute extortion. Choosing sites is an urgent task, but what do two or three years mean when we must guard an ensemble of settlements from trouble in 600 years?

Quite naturally, from now on the societal acceptance of placing all kinds of hazardous waste is at least as essential a viewpoint as is technical suitability. As the nuclear

director says: "If Ofalu, which is most suitable, does not accept the waste, then there will be no settlement in Hungary to accept the waste."

Timely provision of technical information, the use of experts selected by local people henceforth represents the starting point. Also the promise of financial compensation must be made at the first moment. Let's call it a just benefit. The people of Ofalu are wrong when they interpret this as bribery. Compensation is due only if the suitability of the site is proven. But people living in the shadow of hazardous waste are by all means forced to endure a certain kind of psychological burden. They are, even if their health is not threatened by any damage, and even if compared to people in cities and large cities, they are living in a "reservation" of health. Because even then, that hazardous waste is there. One must also reckon with the fact—and for this, too, compensation is due—that the proximity of hazardous waste will depress lot and real estate values. It is also worth thinking about investments that create jobs, because the sites chosen are in the vicinity of outlying settlements which provide few jobs. In addition to all this quite a few psychologically important angles may engender friendly feelings toward the acceptance of such investments. For example: Control must be exercised by the local people, although paid for by the power plant operators. The village must receive its share of the waste producers' profits also later. Concerning the nuclear waste dump I heard of an idea according to which the people of Paks would do their best if they built a pioneer camp for their own children between the nuclear waste dump and Ofalu. In doing so, let them show that they are certain in what they are doing.

One could continue with a listing of political, financial and psychological methods of compensation and convincing. I would not say that the people of Paks have not pursued this, but they have done so in a delayed phase. I have also made the mistake of suggesting that "the ship" appears to have floated away. I confess, this is what I have felt many times. The initial view appears to be turning around.

By now, Ofalu is not interested in Paks.

4,000 Demonstrate

51003006 Budapest NEPSZABADSAG in Hungarian 8 May 89 p 4

[Article by Tamas Ungar: "Protesting the Ofalu Nuclear Waste Dump, 4,000 From Three Villages Demonstrate"]

[Text] Despite cool, rainy weather, 4,000 people staged a protest against the planned radioactive waste dump to be located in the highlands above the villages of Ofalu, Feked and Vemend. Demonstrators from the three villages walked up to the site designated for the establishment and listened to speakers representing environmentalist and alternative movements as well as the federation for German[-speaking] nationals. Ferenc Wekler, joint council chairman for Mecseknadasd, Ofalu and Obanya underscored the fact that local residents have a right to decide regarding matters that affect them. He called attention to the fact that [people of various] nationalities reside in the area, and if the nuclear waste dump is established against their will, such action may have a forced assimilation effect, because it can be expected that many would move away from these villages under those circumstances. At the conclusion of the peaceful demonstration the participants drafted a position statement supportive of Ofalu's and the neighboring settlements' struggle against the energy lobby, and rejecting all pressure disguised by the mask of professionalism which is supposed to declare the site as suitable for the nuclear waste dump.

The organizers held a press conference in the afternoon. We learned that the Paks Nuclear Plant Enterprise sent a letter to every resident in the three villages, informing them that the ad hoc committee of the Hungarian Academy of Sciences did not find the site unsuitable. A telex message received from Ivan T. Berend was read at the press conference. In it the chairman of the Academy informs Baranya County building department chief Lajos Kovacs that the ad hoc committee of the Academy, supplemented by four members of the Academy's presidium, shall rewrite its proposed finding concerning the nuclear waste dump in a manner consistent with what was said in the presidium's debate over the issue. The rewritten finding, which thereafter should be viewed as a resolution by the presidium will be forwarded immediately to the county council. Accordingly, at present the people from Ofalu, and quite naturally, the head of the County Council building department do not know whether the "not unsuited" qualification provided at the 2 May presidium session, and which was reported by several newspapers, may be considered as final.

The expert committee hired by Ofalu has substantial problems with the meaning of the expression "not unsuited." As university professor and departmental chairman Dr Tibor Szederkenyi, chairman of the independent expert committee said, this designation is useless within the technical sciences. A site is either suitable or unsuitable, or it may be rendered suitable through the application of technology. Szederkenyi added that based on new research the area is now deemed as even more prone to earthquakes, because photographs taken from space show that not only the lower Mecsek fault is closer than it was believed to be earlier. Another, thus far unknown fault crosses the lower Mecsek line near the establishment.

The expert council confirmed its view that within the Carpathian basin the deposit of radioactive waste near the surface is inconceivable, deposits deep below the ground provide the only level of desirable protection. Such research has been accomplished before: Members of the committee said that this solution would not significantly increase the cost of investment.

Delay Recommended

51003006 Budapest NEPSZABADSAG in Hungarian 8 May 89 p 4

[Report: "Nagymaros No, Paks Three Years Later—Energy Management Institute [EGI] Announces Position"]

[Text] The EGI will hold a press conference today concerning its enterprises and an alternative power plant construction strategy developed by the Institute. Regarding the latter EGI president Istvan Papp said that according to the strategy developed by the Institute in 1988, in the interest of reducing investment costs the construction schedule of the Bos-Nagymaros power plant and of the 1,000 megawatt expansion of the [Paks] nuclear power plant must be reviewed.

In the Institute's opinion construction of the Nagymaros plant can be stopped. In such case the capacity of the energy system would be reduced. The output not realized from Bos-Nagymaros, however, may be replaced by virtue of existing power plants connected to remote heating systems which generate both heat and electrical energy. In halting the Nagymaros power plant construction some 28 billion forints would be saved, while replacing the lost capacity would cost only 8.8 billion forints in development funds. The savings are influenced, of course by some other circumstances. For example, costs would increase as a result of restoration and possible payments for damages, on the other hand sewage treatment and operating costs would be reduced.

Insofar as the Paks Nuclear Power Plant is concerned: According to the Institute's findings some 44 billion forints would be saved if the 1,000 bloc becomes operational only three years later.

All this is important not only from the standpoint of investment cost savings, but also because during the 1990's remote heating systems in Hungary would have to be reconstructed anyway.

Physicist Protests Nuclear Dump Site in Ofalu

AU1406133389 Budapest MAGYAR HIRLAP in Hungarian 9 Jun 89 p 6

[Interview with physicist Istvan Frey by Erzsebet Juhasz: "Open Letter to President of the Hungarian Academy of Sciences—The Decision on Ofalu Should Be Invalidated!"; date and place not given]

[Excerpts] As is well known, at its meeting on 2 May, the Presidium of the Hungarian Academy of Sciences decided to accept the report submitted by a committee of experts set up to examine the establishment of a radioactive waste dumping site, according to which the site allocated near the village of Ofalu is not unsuitable for this purpose. In connection with this, Istvan Frey of Mecseknadas wrote an open letter to Academy President Ivan T. Berend. We interviewed him about this letter which he had also sent to us.

[Juhasz] What prompted you to write this letter?

[Frey] As I wrote in the letter, I was surprised that, in his statement to the radio program "Evening Magazine" on 2 May, the president did not mention this decision, although this case of the village of Ofalu, a case that has become a national issue, would have deserved mentioning. Although 3 weeks passed since then, the text of the decision and the experts' materials have not been published to this very day. [passage omitted]

[Juhasz] What is your opinion about this issue?

[Frey] I do not consider myself an expert, and I expressed my opinion in the letter on the basis of simple facts. One of these facts is that the artificial and natural barriers must hinder the spreading of isotopes for about 600 years. According to the plans, the barriers would be made of a combination of strata of metal sheets. The life span of these sheets is only 100 to 200 years, and thus, the barrier would also hinder the spread of isotopes only for that amount of time. [passage omitted]

[Juhasz] What did you suggest? What should be done next?

[Frey] In my opinion, the whole procedure should start from the beginning, with a clean slate. The concept according to which the establishment of this nuclear dumping site at Ofalu would be in our national interest is mistaken. As far as I know, and because no systematic research has been carried out, nobody has proved that this place is the most suitable one. [passage omitted]

Finally, I also suggested to the Presidium of the Hungarian Academy of Sciences to revoke its decision made on 2 May and to make it possible for a real professional and public debate to emerge on this complex problem, because this issue cannot be closed by means of a campaign! If the committee of experts maintains its position, the individual opinion of each committee member should also be made public.

YUGOSLAVIA

Federal Chamber Bans New Nuclear Plants

LD1506104689 Belgrade TANJUG Domestic Service in Serbo-Croatian 0929 GMT 15 Jun 89

[Text] Belgrade, 15 Jun (TANJUG)—Delegates to the Federal Chamber of the SFRY Assembly today adopted a proposed law banning the construction of nuclear power plants in Yugoslavia. The law bans the construction of nuclear power plants and of installations for producing and processing nuclear waste. The ban also covers the adoption of any investment decisions, the drawing up of investment programs and technical documentation for constructing nuclear power plants and for installations for producing and processing nuclear fuel.

A proposal by the Federal Executive Council for the ban to be in force only until the year 2000 was not accepted.

BRAZIL

Avibras Head Discusses PRC Joint Venture

PY1906004389 Sao Paulo FOLHA DE SAO PAULO in Portuguese 16 Jun 89 p A-10

[By special envoy to Paris Roberto Lopes]

[Text] Brazilian businessman Joao Verdi Leite, owner of Avibras [Brazilian Air Space Industry], Brazil's largest weapons exporter, said in Paris yesterday that the political crisis in the PRC "will not affect at all" the joint venture his company has just signed with the Chinese Ministry of Aeronautics and Astronautics Industry. The joint venture will sell space programs and launchings to Third World countries. Verdi made these statements during a news conference at the 38th International Aviation Fair in Le Bougert (north of Paris).

The recently created joint venture is called Inscom (International Satellite Communication) [previous three words in English], of which Verdi is president. An hour after the news conference, during an exclusive interview with the Rede Globo Television company (which was making a program on the Bourget Fair for its program "Fantastico"), Verdi said he thinks that the PRC is heading toward a political "opening." He described the current Chinese difficulties as "a domestic problem."

Inscom is the result of 3 years of negotiations between Verdi and the Chinese Government. Fernando Mendonca, an Inscom executive, thinks that the new company will sign contracts to launch at least 10 percent of all the space launchings that will be made in the world before the end of the century, which would be about 15 launchings a year. Inscom will have its legal headquarters in Vaduz, capital of Liechtenstein, and its offices in Beijing and Sao Jose dos Campos (Sao Paulo).

Marcio Barbosa, general director of the National Institute of Space Research (INPE), was present during the TV Globo interview with Verdi. The Chinese partner of Inscom is the Chinese company Great Wall Industry [previous three words in English], an industrial branch of the Chinese Aeronautics and Astronautics Ministry. Its representative, Frank K. Cheng, was also present during the interview. He only answered two questions, and said that Inscom's prices would be lower than ones currently prevailing in the market. Inscom will compete directly with the U.S. NASA program and the Ariane space program, a European association for space programs.

Pedro Vial, Avibras official relations director, told FOLHA DE SAO PAULO that Inscom will sell a space program which includes the launching of artificial satellites for less than $100 million. When asked what sales strategy Avibras will use to convince a government to buy a space program from a Brazilian-Chinese association and not from the United States or Europe, Verdi smiled and said: "The PRC, which will provide the satellite, the rocket, and the launching, has already made 20 successful launchings into space. It is true that it has made less launchings than the competition, which has been in business for a longer time. We are aware that our services will need to be promoted well."

Uranium Supply Agreement Signed With URENCO

PY1506213789 Sao Paulo O ESTADO DE SAO PAULO (Economics Section) in Portuguese 14 Jun 89 p 4

[Excerpt] Rio de Janeiro—The Brazilian Nuclear Industries [INB] [formerly NUCLEABRAS] Company has signed an agreement with URENCO [Uranium Enrichment Consortium] (a joint venture formed with German, Dutch, and British capital) for processing uranium supplied by Brazil. The uranium will be enriched and sold back to Brazil for use in the Angra I, II, and III nuclear plants. The amounts will be determined by Brazilian demand, and the prices will follow the international market. The new contract supersedes another that was signed in 1976 which provided for the supply of fixed amounts of enriched uranium. This contract was suspended in 1981 in view of the delay in concluding the construction of Angra II and III.

URENCO Trade Director J.A. Paleit, a German, came to Brazil to sign the new contract. Paleit yesterday said that his firm did not fine Brazil for interrupting the purchase of uranium, as provided by the old contract. He said he hopes that, with the revision of the Brazilian nuclear program—which provides for Angra II and Angra III to begin operation in 1994 and 1996 respectively—the first 16-ton cargo of enriched uranium for the third recharge of Angra I will arrive in Brazil in 2 or 3 years.

According to INB President John Formann, the new contract is better in that Brazil will not need to determine ahead of time the exact amount of uranium it will need. Even though the final price will be determined by the market, Foremann estimates that the first uranium shipment for Angra I will cost Brazil close to $12 million. [passage omitted]

Sarney Approves Draft Law on Nuclear Policy

PY1406235889 Brasilia Domestic Service in Portuguese 2200 GMT 14 Jun 89

[Text] During a meeting of the Higher Nuclear Policy Council at the Planalto Palace today, President Jose Sarney approved a draft law concerning radioactive waste and the national nuclear energy policy.

At the meeting were 17 ministers, 4 congressmen, 8 scientists, and leaders of enterprises linked to the nuclear development field.

At the meeting President Sarney told the participants that Brazil will maintain its inalienable right to fully master nuclear technology and confirmed the national commitment to produce nuclear energy only for peaceful purposes.

The president ordered a group of scientists to review the national nuclear energy program's safety system.

Among the issues discussed during the meeting was the use of natural uranium in future Brazilian reactors, the effects of radiation on humans, and the problem of radioactive waste in Abadia, Goias.

Joaquin Carvalho, president of the Radioactive Waste Consultant Committee, said that the waste in Abadia will be moved to a definite destination at the end of the year. The site will be somewhere in the state of Goias. He said that the committee has already investigated eight possible sites for the storage of nuclear waste but that the final decision must be made by Governor Henrique Santillo.

Successful Launching of Sonda IV Detailed

33420061n Rio de Janeiro MANCHETE in Portuguese 13 May 89 pp 120-122

[Text] With one more launch as successful as that of Sonda IV, fired off last weekend at the Barreira do Inferno launch base close to Natal, RN, Brazil will be ready with its rocket launcher within the year. The launches of the Sonda IV family, set at five in number and designed to perfect Brazilian space vehicles, should be completed with a new space trip next May. The good news is that everything is going well, both on the ground and in space. It is going so well that Brazil is already being viewed abroad as a future supplier of services for putting satellite services into orbit, such as those for telecommunications, data gathering and remote sensing, in addition, obviously, to those for military applications, also built in Brazil by the National Institute for Space Research (INPE) at Sao Jose dos Campos, SP.

Descriptive parameters of the Sonda IV performance include its height, 11.5 meters (about the height of a 5-storey building), its weight, 7.3 tons at takeoff, and the fact that it climbed in a straight line to an altitude of 820 km with no hitches. Since it is 2-stage, with a working cargo of 500 kg, comprised of instrumentation that sends flight performance data to earth stations, the rocket needed only 16 minutes to achieve target altitude. This target altitude, it should be noted, is higher that the level needed to put the service satellites into orbit. Sonda IV took off at about 3,000 meters per second despite its more than 5 tons of motor propellants.

The operation, called Rio de Janeiro, was designed to make further tests of some components developed by Space Activities Institute (IAE) technicians, also at Sao Jose dos Campos, SP. There was a 25-hour delay in the launching due to bad weather. Interestingly, it was the same set of unfavorable weather conditions that delayed the Atlantis space bus launching at Cape Canaveral. There was heavy rain in Natal on the 27th, the date set for blastoff. The cloudy conditions would have created turbulence during the rocket's climb, and could have caused it to stray from its trajectory, which would have caused the computer that tracks its performance to destroy it in flight. And the tests were very important. The countdown, also controlled by computer, was interrupted, frustrating those who had been especially invited to the launching, among them the minister of aeronautics, Brigadier Moreira Lima. But, from the looks of engineer Jayme Boscov, the father of the Sonda rocket family, called the Brazilian Von Braun by his friends, it appeared that everything would go well the next day. And it did, in spite of the fact that cloudy conditions persisted at the launch site.

The Sonda IV tested a series of innovations, such as the use of a hydroxilized propellant for the motors, which measure 1 meter in diameter. The propellant was of 99-percent national design.

Tests were also made of a newly designed type of valve, developed to be more efficient than those used on board previous Sondas. The new type made it possible to reduce the number of valves from 20 to 12. In the opinion of technicians, it was an unexpected success. They were also successful in verifying the utility of a system of movable tubing, equipment that is highly critical in rockets, since it is this system that executes the steering of the second stage of the Sonda IV. Also tested was a reciprocal inertial platform, also researched and developed by the Boscov team, and responsible for piloting the entire flight. The second stage, upon reaching its apogee of about 820 km in altitude, plummeted into the ocean, as planned, about 600 km from Natal.

This fourth test of the five that are planned has already demonstrated the operational capabilities of the rocket and its systems and components, all of them to be used in the Satellite Launch Vehicle [Veiculo Lancador de Satelites] or VLS, as it is called. Actually, this fifth generation of the Sonda family will have added, most importantly, three additional thrust motors mounted on the vehicle's base in a cluster, which, with the Sonda IV rocket engine that was used in the present flight, constitute the prototype for the satellite launcher.

The launch also attested to the efficiency of the personnel and the earth instrumentation. The telemetry station precisely monitored the entire flight, receiving data emitted by the onboard working cargo, and transmitting them to the battery of computers for performance analysis. Also, the precision radar system—at Barreira do Inferno there are two, should one fail—monitored the entire ascent, the achievement of apogee in outer space, and the descent of the stage through to its ocean landing. The radars are part of the flight security sector, and not

only track the ascent and descent routes, but also, in the case of any deviation from trajectory, trigger the self-destruction equipment on board the rocket.

According to the minister of aeronautics, the new launch base at Alcantara, in Maranhao, will probably be ready this year. Some of its buildings, such as those for telemetry, meteorology, approach radar, sound-balloon preparation, precision radar, and microwave are already built, and require only the installation of equipment. This does not mean, though, that the launch base at Barreira do Inferno will be deactivated. It is very important. So important that France uses its services to monitor the launches of its Ariane rockets from the base at Kourou in Guiana. Also, precision vehicles, of the same size as Sonda IV,, will continue to be launched there, and its services will be leased to friendly nations. Like the base at Alcantara, Barreira do Inferno has a special significance understood only by technicians and insiders: Since it is located on the equator, the launching of vehicles to be put in orbit from there involves a 25-percent saving in fuel consumption; that is practically a quarter of the weight of the engine propellant, allowing more space for working cargo or for heavier satellites. Sonda IV, it should be remembered, was the largest rocket yet built in Brazil. It is in the class of the space vehicles of the nations belonging to the exclusive cosmic club, of which Brazil is already a member. In spite of a great deal of justifiable international resistance. With a little more time and a slightly expanded budget for the development of space technology (which no one sells nor shares), Brazil will pass from being a buyer to a seller, and then to a competitor, including the military applications sector.

Deputies Commission Briefed on Space Program

PY1506012889 Brasilia Domestic Service in Portuguese 2200 GMT 14 Jun 89

[Text] Today Brigadier (Larry Lobo), director of the Aeronautic Ministry's Research and Development Department, addressed the Chamber of Deputies national defense commission on Brazil's space program, which includes plans for launching four satellites between mid-1992 and 1996.

For this purpose Brazil is building the Alcantara Space Research Base in Maranhao. It will cost $200 million to build the base, and it is scheduled to be completed within 2 years.

During the past 2 years the Aeronautics Ministry has already invested $170 million in this project, which is being built because the Barrera do Infermo Launching Station in Rio Grande do Norte is not designed to handle large vehicles. The rockets alone are 20 meters long.

Four of the vehicles to be used to transport the satellites into space will also be built in Brazil. According to Brig (Lobo), Brazil will become capable of supplying services in the satellite communication field despite the delay caused by a 55-percent cut in the sources earmarked for the program. The Alcantara space center, located 22 km from Sao Luis, is scheduled to become operational at the end of this year and should be fully completed in 2 years time.

Tomorrow the congressmen will visit the site at the invitation of the Aeronautics Ministry.

Itamaraty Official Explains Weapons Programs

PY2006014489 Brasilia Domestic Service in Portuguese 2200 GMT 19 Jun 89

[By Gustavo Mariani]

[Text] Itamaraty Secretary General Paulo Tarso Flecha de Lima has said that Brazil's efforts in the scientific and technological field are not a threat to the United States. He emphasized that these efforts are aimed only at national development and that Brazil has always been a peaceful country and will never be a threat to its neighbors.

Regarding Brazilian military policies, Flecha de Lima said:

[Begin recording] Although Itamaraty's policy is not to comment on the sale of weapons abroad, I must insist again that Brazil is very conscientious regarding its sales of weapons abroad. We always take into consideration the political implications of the sales and of the purchasing country's strategic scenario. [end recording]

The Itamaraty spokesman said that the U.S. Government plans no economic sanctions or military actions against Brazil if the country develops a program to manufacture missiles. Rumors of such sanctions originated due to a study being carried out by a private company for the U.S. Library of Congress on the technological capacity of 16 countries, including Brazil.

FRG Scientists Suggest Angra Plant Shutdown

Reactor Safety Questioned

PY0206141489 Rio de Janeiro O GLOBO in Portuguese 1 Jun 89 p 18

[Text] Frankfurt—Three FRG scientists, among them two who are mainly responsible for the Brazilian-FRG nuclear accord, have suggested that the Brazilian Government shut down the Angra I nuclear plant and reconsider the construction of Angra II and III. They argue that Angra I represents a risk because the plant does not meet modern safety requirements for that type of plant. The German Biblis B plant, which has the same characteristics of Angra II and III, has been closed since January due to similar problems. The FRG Government has decided to shut down the plant due to a leak in the reactor's cooling system, which has demonstrated the system's vulnerability.

According to physicist Berhard Fischer, an expert in reactor safety and a member of the Oko Institute, a private research group which has already developed two projects requested by the FRG Government, there are at least three things that hinder the operation of Angra I: its location, the weakness of the safety systems as compared to the reactor's pressure, and the failures in the coolant piping system. He believes the fact that Angra I is constantly being activated and shut down is an additional risk.

Fischer stated: "Angra I was wrong from the start because it was built on a geological fault. Nuclear plants, regardless of the type, are inherently unsafe when built on a secure terrain, and in the case of Angra I that factor has been multiplied several times." Moreover, the changes in temperature and pressure to which the reactor is subjected every time the plant is shut down and activated again are causing fatigue in the equipment, increasing the plant's risk of accidents.

Fischer added that Angra I uses saltwater from the sea in the plant's cooling system. That water, which is highly corrosive, is used in the tertiary circuit, which is also known as the emergency circuit. That combination is not recommended from a safety point of view. "Those pipes have already been changed once by Westinghouse (the enterprise that supplied the equipment for the plant) due to corrosion," he said. "But the failures continue and the pipes may fail to resist the reactor's pressure in case of an accident," he explained.

Physicist Horst Talarek and biochemist Claus Frischkorn, from the KFA [Kernforschungsanlage] Nuclear Research Center, have confirmed the warnings of the Oko Institute scientist. The KFA is an FRG Government institution operating in the city of Julich, 50 km from Colonia. The KFA has also been responsible for training the Brazilian technicians participating in the Brazilian-FRG nuclear program and has helped the technology being used today in Angra II and III. The systems supplied by the FRG for those plants are safe, but today I would no longer take the resonsibility for them, Frischkorn stated. He is the coordinator of bilateral Brazilian-FRG cooperation program within the KFA.

He said: "The safety of a nuclear plant demands discipline and training of personnel and I do not think that exists in Angra I."

According to Frischkorn, the Brazilian Government should consider closing Angra I immediately.

He stated: "That plant is a crazy quilt. It has equipment and components manufactured by different suppliers, and no one knows how they will behave in case of an accident. No one knows how they would react in case of a leak, for example."

He added that every country that had nuclear plants in the conditions of Angra I have already taken the initiative to close them down. He said: "The Brazilian Government must study the possibility of shutting down that plant or assume the responsibility for the risks from now on."

Furnas Rejects Criticism

PY0306185289 Rio de Janeiro O GLOBO in Portuguese 2 Jun 89 p 18

[Text] Furnas electric power company, which operates the Angra dos Reis nuclear power plant, yesterday released a communique rejecting a suggestion by FRG scientists to the Brazilian Government to stop the construction of the Angra I power plant and to rethink that of Angra II and III for safety deficiencies. The Furnas communique emphasizes that the FRG scientists' statements contradict the technical verdict of the inspection teams of international organizations. The communique states the following:

"Regarding the statements from FRG sources on the Angra I, II, and III power plants disseminated by several media in Brazil, Furnas wishes to clarify:

"We do not know what technical bases or documents support the German scientists' statement; furthermore, these scientists have never visited the Angra power plant or contacted Furnas.

"Their statements are not in keeping with the reports from many inspections and checks carried out at Angra I by unquestionable and highly qualified international organizations like the International Atomic Energy Agency (IAEA) and the U.S. Institute of Nuclear Plant Operations [Instituto de Operacao de Usinas Nucleares], besides those of many foreign experts—including German experts—on different plant parts.

"Furthermore, in February and March 1989 the Angra I plant was inspected by the IAEA of Vienna. The inspection, which was requested by Furnas as part of its policy to improve its operations, was carried out for 21 days by 12 international experts, one of whom was from the FRG. This inspection team arrived at satisfactory conclusions, since no serious problem or threat to the plant's operational safety was detected. This is why the plant is working normally.

"Regarding the training of personnel, the IAEA report stresses that the training level of Angra I personnel is above the international average. It is important to point out that since 1985 foreign nuclear plant personnel, mainly from Germany, have been trained in Angra by Brazilian instructors. There have been a total of 350 trainees from several FRG nuclear plants, besides 60 Spanish and 35 Argentine trainees, which is proof of the excellent installations at the Angra plant and the high technical ability of its instructors.

"The allegation of technical indiscipline in Angra I is completely thoughtless and unfounded, since it is impossible to make such a statement without knowing the plant. We reiterate that this statement is false and lacks seriousness.

"In conclusion, Furnas reports that it is in contact with the FRG sources who designed the plant and with the designers and manufacturers of the Angra II and III power plants to seek further clarifications, which will be released to the public."

BANGLADESH

Paper Registers Concern Over Regional Arms Race

BK0606151489 Dhaka THE BANGLADESH OBSERVER in English 31 May 89 p 5

[Editorial: "The Arms Race in the Subcontinent"]

[Text] The successful test-firing by India of a surface to surface missile with a range of 160 miles marks a stage of development in the missile technology that is a matter of pride for the Indian arms research institutions. The "Agni" belongs to a series of missiles from Prithvi, Akash, Nag, and others in the pipeline. It is also aiming for intercontinental ballistic missile, now a subject of vigorous research. Whatever the justification, military or commercial, India is offering for going ahead with the development in its missile technology, the fact remains that it is bound to give fresh momentum to existing tensions between India and Pakistan, in the first place, and produce destabilising effects on the general situation in the subcontinent, in the second.

Those with the interest of this region, with India at its centre, at heart have been led to contemplate with concern such an escalation in the existing arms race and where it may end up. For one thing, geopolitically or geo-militarily, the balance of power between the two rivals, India and Pakistan, has been a delicately maintained one over the years, and the fear of either of them acquiring a strategic edge over the other instantaneously leads the latter to do its best to catch up, if not to outstrip, its rival.

The exploding of a nuclear device by India in 1974 was the first extraordinary (for the non-nuclear subcontinent) turn in the arms race. In response to the proven nuclear success by India, Pakistan started bending its research and search towards a defensive weapon matching the latest superior Indian one. We are not aware if Pakistan has perfected its nuclear technology enough to produce the bomb. Pakistan however keeps rejecting the charge that its nuclear efforts are not for purposes of energy generation but for the manufacture of a bomb. The fact is counter-defence against manifest threats posed by superior weaponry is the common style of strategic reaction.

The latest missile event is calculated not only to accelerate the arms competition between the two countries from the nuclear to the missile line, but drive the two neighbours farther apart increasingly diminishing the possibility of rapprochement or reconciliation. The distance from missiles that could hit targets inside an enemy country and a live, shooting war is short. It is indeed shorter where mutual mistrust and suspicion is both endemic and historical. India has fought three wars with Pakistan and one with China. It must be a reflection on the quality of subcontinental statesmanship that the whole period since the wars has been one more of mounting tension than of any positive bilateral or multilateral (including China) move towards defusing it and developing the philosophy of co-existence. The escalated arms race threatens to blot out such a chance for good.

The newly growing impulse towards a febrile arms build-up in the subcontinent is in painful contrast to the overall global effort by the superpowers to deescalate global tension by cutting arms including nuclear ones and pulling out troops from the hitherto sensitive borders. China and Russia have provided the regional example of how two estranged countries could become comrades again. May be, Gorbachev's imaginative approach to the old Sino-Soviet enmity coupled with his statesmanship and supraparochial vision, made this miracle possible. In the West the bilateral decision on the cards for troops and armaments reduction in Europe is the other example of the world moving in the direction of peace—away from the temptation to war. The bitter experience of peace to be built up by cutting not only the material means of war but also trying to make the hearts meet.

This the superpowers are doing despite their financial and technological capability to make arms, and maintain them and the troops that will use them. For the Asian subcontinent or for that matter, poor Third World countries massive defense outlays and reaching for sophisticated lethal weapons is a crime against the teeming millions that live below the poverty line, but are made to pay for them. Certainly for the Indian subcontinent the wisest course is not that of perpetual collision—and perhaps an eventual war with at best a pyrrhic victory, if at all but to follow the modern example set by the superpowers and work it out within the frame of their regional relationship.

Wise- and wizened-Indians, Hindus and Muslims, must be missing Mahatma Gandhi and his philosophy which real-politik seems to have sabotaged and supplanted creating problems making answers difficult to find.

INDIA

U.S. Criticized During Nuclear Disarmament Meeting

BK2805035789 Delhi Domestic Service in English 0240 GMT 28 May 89

[Text] The All India Peace and Solidarity Organization held a discussion on nuclear disarmament in New Delhi yesterday. The speakers stressed the need for total abolition of nuclear weapons. They urged the NATO powers not to go in for modernization of the existing tactical and short-range nuclear weapons. The speakers also expressed resentment and distress over the U.S. threat to India through coercive trade regulations and for pressurizing New Delhi to accept the patent law. They

demanded an end to such efforts at arm twisting of developing countries. Over 50 eminent personalities, including a visiting 3-member Soviet delegation, took part in it.

Soviet Envoy Commends India, Assails U.S. on Agni

BK1306091289 Delhi Domestic Service in English 0830 GMT 13 Jun 89

[Text] The Soviet ambassador in India, Mr Viktor Isakov, has said that the successful launching of Agni [surface-to-surface missile] demonstrated India's ability in the field of missile technology. Speaking to newsmen in New Delhi today, Mr Isakov commended Indian scientists for their achievement.

Referring to the American criticism of India's missile program, the Soviet ambassador said it is wrong to say that Agni would spark a missile race in South Asia.

Accusing the West of adopting double standard, Mr Isakov wondered why Pakistan's statements that it did not possess nuclear weapons were accepted and India was suspected when it developed missile technology.

Surface-to-Surface Missile Test Successful

BK0606001389 Hong Kong AFP in English 1950 GMT 5 Jun 89

[Text] New Delhi, June 5 (AFP)—India successfully test-fired a surface-to-surface (SS) missile Monday [5 June] from a launch pad in eastern Orissa State to add to its growing arsenal of latest guided weapons systems, reports here said.

The PRESS TRUST OF INDIA (PTI) said the indigenously-built Trishul (Trident) had been fired in Chandpur, 150 kilometres (93 miles) from Calcutta on Monday afternoon.

Defence Ministry officials in New Delhi confirmed that Trishul has been tested and said the latest missile had a range of 25 kilometres (15 miles).

The officials said Trishul was the second in the series of one class of missiles to be tested so far. India last year tested a similar SS missile with a range of nine kilometres (5.6 miles).

The Trishul would be the second-line assault missile system built by the state-run Defence Research and Development Organisation, the officials said and added that it could be armed only with conventional warheads.

The test of Trishul comes 17 days after India fired its first homemade medium-ranged ballistic missile called Agni, or Fire, from the same launch pad into the Bay of Bengal, triggering an uproar in the United States which had tried to block India's attempts at building IRBM [Intermediate Range Ballistic Missile]-class weapons.

The 75-tonne Agni, which has a maximum range of 2,500 kilometres (1,560 miles) and can be armed with nuclear warheads or put civilian satellites into orbit, has capped India's ambitious Integrated Guided Missile Development Programme (IGMDP), launched in 1983 to reduce dependence on the west and slash imports.

The IGMDP scientists last year tested a tactical SS missile called Prithvi (Earth), with a range of 250 kilometres (155 miles), and have developed a laser-guided anti-tank missile called the Cobra.

IRAQ

Reservations Voiced Over IAEA Report on Israel

JN1606154489 Baghdad INA in English 1510 GMT 16 Jun 89

[Excerpt] Vienna, June 16, INA—Iraq expressed reservation over a report forwarded by Director General of the International Atomic Energy Agency (IAEA) Hans Blix to the Agency's board of governors over "Israeli" nuclear capability and threat.

Head of the Iraqi delegation to the final session of the board Dr. Rahim 'Abd-al-Katl said that the Iraqi delegation was not allowed to examine Mr. Hans Blix's report so as to make conclusions especially with regard to the formulas of guarantees that could be applied in the Middle East.

He pointed [out] that Iraq could not ignore that the best way to eliminate source of concern over presence of nuclear weapons in the region was the acceptance of complete supervision over all nuclear installations without exception.

Dr. al-Katl expressed hope that opportunity will be available to discuss the report comprehensively during the meetings of the board in September to the aim of best preparation for discussions of the general conference over the Israeli nuclear danger and capabilities. [passage omitted]

Press Comments on 1981 Israeli Raid on Reactor

JN0706104089 Baghdad INA in English 0930 GMT 7 Jun 89

[Text] Baghdad, June 7, INA—The Iraqi newspapers today stressed that Iraq categorically rejected and resisted any attempt to exert pressures on it or any attempt aiming at weakening the potentials of its national security.

That was mentioned in the editorials of the Iraqi dailies, published here today on the occasion of the 8th anniversary of the Zionist raid on the Tammuz reactor which was built for peaceful and scientific purposes.

AL-THAWRAH daily described the raid by saying that it represented the aggressive and terrorist nature of the Zionist entity.

AL-THAWRAH newspaper, organ of the Arab Ba'th Socialist Party said in its editorial that the Zionist alliance completely failed to achieve any one of the targets of the big aggression conspiracy and it also failed to prevent Iraq's potential to possess the scientific and developed technological aspects.

The daily stressed that Iraq felt totally secured and fully confident that it is stronger and more capable than ever to destroy and to foil all aggressive and conspiratorial plans and to deter all those who try to aggress upon its scientific and industrial installations.

AL-THAWRAH daily went on to say that the enemies of Iraq must review and must try to understand and comprehend the changes and developments that occurred in the Iraqi and Arab arenas and get the right conclusions.

It stressed that Iraq today is not like Iraq of 1981 and the enemies would pay dearly for any foolish act and for any act of aggression carried out by them against the strong and capable Iraq.

The paper added that the Zionist propaganda campaigns against Iraq aimed at diverting the attention from the heroic Palestinian uprising which pushed through its continuation and political achievements the Zionist entity into a complete international isolation and showed the Zionist entity's total inability to confront the Palestinian people although it possesses means of destruction and oppression.

AL-THAWRAH newspaper said that the Zionist entity did not hide its concern over the Iraqi victory. It added that the Zionist and imperialist circles and their related propaganda organs tried to minimize the great Iraqi victory and to lessen its political and psychological effects among the Arab citizens.

It said that the Zionist raid represented the most dangerous and the most prominent link of the cooperation, coordination and alliance between the Iranian regime and the Zionist entity and showed that the two sides participated in one plan aiming at dividing and partitioning the Arab nation so as to give legitimacy to the existence of the Zionist entity.

Meanwhile, AL-THAWRAH daily said that the raid had shown more pages of the Iranian-Zionist cooperation whether in planning to wage war against Iraq or threatening its national existence and sovereignty or in the operation of material support for the Iranian aggression in the fields of armament, information, military aid and other fields.

AL-JUMHURIYAH daily added that Iran had given the Zionist entity pictures and information that helped it to carry out its crime in hitting the Iraqi nuclear reactor.

The paper said that the raid also reflected the expansionist and aggressive trend of the Zionist entity on the usurped Palestine and this trend related to the dependence of the Zionist entity on military force for aggression and reaching its evil targets regardless of international laws and charters.

It stressed that the Zionist aggressive entity did not hesitate to commit any crime against any vital installation in any Arab country especially the development establishments of advanced scientific nature such as nuclear installation which are prepared for industrial and agricultural purposes.

AL-QADISIYAH daily said that Iraq is stronger than the threats of the Zionist entity officials.

In its editorial on this matter the daily said that the Zionist entity had exploited the engagement of Iraq in confronting the Iranian aggression and hit the Iraqi nuclear reactor which was established for peaceful purposes.

The paper added that this entity must realize that the time of arrogance and intransigence had gone and that carrying out aggression on the Arab countries is no more a policy that can be adopted whenever the Zionist entity wishes.

AL-QADISIYAH newspaper stressed that Iraq possessed sufficient capabilities and elements of power that force the imperialist-backed Zionist entity to reconsider its calculations before trying to commit any foolish adventure.

The paper said that the situation in Iraq in 1981 was not like the situation witnessed by Iraq nowadays under peace, capability and victory.

PAKISTAN

'Positive Response' From France on Nuclear Plant

BK1206135789 Islamabad Domestic Service in English 1100 GMT 12 Jun 89

[Text] The Senate chairman, Mr Wasim Sajjad, has returned home now after a week-long visit to France at the head of the senators' delegation. He told newsmen in Islamabad that the people and government of France were anxiously waiting for the forthcoming visit of the prime minister, Ms Benazir Bhutto, to France, which would go a long way to further strengthen the existing relations between the two countries. The Senate chairman said there was a wide scope of further consolidation of ties between the two countries at all levels.

He said during their talks, the delegation also apprised the French leadership of Pakistan's dire need of nuclear energy resources to overcome its acute power shortage. He said the delegation received a positive response for the supply of nuclear reprocessing plant to Pakistan.

Expert on Heavy Water Leak at Nuclear Plant

BK0206090689 Islamabad Overseas Service in English 0800 GMT 2 Jun 89

[Text] An expert of the International Atomic Energy Agency has reached the conclusion that although leakage of heavy water from the Karachi Nuclear Power Plant resulted in some economic losses, it was not a nuclear accident. The expert, who worked in cooperation with his Pakistani counterpart, has said in a report that during normal plant operation, this event could have led to a safe reactor shutdown by automatic protective system. The report has supported various steps planned by Pakistan Atomic Energy Commission to further improve the operating safety procedures and to strengthen relevant systems of the plant to forestall such occurrences in future.

Minister on Karachi Plant Safety

BK1206141989 Islamabad Domestic Service in English 1100 GMT 12 Jun 89

[Excerpts] The National Assembly continues debate on the new federal budget. In the morning session, nine members expressed their views on the budget. [passage omitted]

The minister for parliamentary affairs, Khwaja Tariq Ahmad Rahim, told the house that after a high-level official inquiry into the causes leading to the spillage of heavy water at Karachi Nuclear Power Plant in April last, steps are being taken to improve the safety of the plant and to ensure that such incidents do not occur again. The house will again meet at 1700 this afternoon.

IAEA Conference Opens in Dimitrovgrad

LD1906152689 Moscow TASS in English 1517 GMT 19 Jun 89

[By TASS correspondent Nikolay Milov]

[Text] Dimitrovgrad, June 19, TASS—The eleventh international conference and meetings of the IAEA [International Atomic Energy Authority] technical committee, which opened here today, will discuss development of high-temperature gas-cooled reactors which are a new trend in nuclear energetics. These events are held in the Soviet Union for the first time and will work through June 23. The meeting in Dimitrovgrad is attended by delegations of scientists and specialists from the FRG, the USA, the USSR, Japan, the United Kingdom, France as well as representatives from China, Poland, Czechoslovakia, the Netherlands, Turkey, South Africa and other countries.

The choice of Dimitrovgrad as the venue is not accidental. The fact is that the town has a research institute of atomic reactors, one of the USSR's largest nuclear centres.

In an interview with the TASS correspondent, the institute's deputy director, Valentin Ivanov said that there was mounting interest in the world in the prospects for the development of high-temperature gas-cooled reactors. He said: "As the research and practice to date demonstrate, the characteristics of these reactors are quite encouraging. With their improved safety and low radiation effect on environment they ensure the possibility of producing thermal energy of enormous potential. That is why the international conference and the IAEA's technical committee will get down to specific proposals concerning designing, licensing, construction, operation and ensuring the safety of the high temperature reactors cooled by gas."

Ignalina Nuclear Power Plant Safety Questioned

51000005 Vilnius SOVETSKAYA LITVA in Russian 22 Mar 89 p 3

[Article by V. Kaminskas, doctor of technical sciences and professor, under the "Power Generation: Problems and Solutions" rubric: "Will Ignalina AES Be Safe?"]

[Text] The Lithuanian people have shown their distrust in the Ignalina AES. Above all, it was expressed in the decisive "No" to the construction of a third power-generating unit. In turn, the nuclear power plant's workers and designers blame Lithuanian authors for their initial lack of objectivity and incompetence, noting several imprecisions encountered in publications and speeches.

Although I was not a specialist on using atomic energy, I cannot rightfully be considered a "dilettante" either since I am a representative of cybernetics—the science of the general laws of modeling and managing complex systems. In the past few years I have come to be acquainted with the processes that take place in nuclear power reactors, the principles and systems of managing them, and methods of ensuring the operating safety of reactors. I would like to express some of my ideas with regard to these topics.

AES belong to the class of very hazardous industrial facilities. In view of this, their reactors should possess the property of "self-regulation." What is this? In lay terms, the heat liberated by a reactor may not increase rapidly and should always be stabilized independently of any errors on the part of service personnel or a failure of the automation system. The property of "self-regulation" specifies the so-called effects of reactivity, the sum effect of which should, through the inner feedback circuits, be negative. This means that any increase in a reactor's power should, through the inner feedback circuits, be converted into negative reactivity. This reactivity "opposes" any further increase in power until the process is stabilized.

In uranium-graphite heterogeneous single-loop boiling water [RBMK] reactors, two of which are already operating at the Ignalina AES as we know, one of these reactivity effects (the so-called steam reactivity effect) has a positive impact. In this case, the formation of a large quantity of steam in the reactor's core results in an increase in its thermal capacity, which in turn facilitates additional steam formation, i.e., the reactor's capacity continues to increase. Under normal operating conditions, however, the steam effect is not predominant. The sum result of these reactivity effects therefore remains negative, and the reactor maintains its property of "self-regulation."

Nevertheless, can a situation not be created in which a positive steam reactivity effect becomes predominant? This is exactly what happened at the No. 4 unit of the Chernobyl AES where a catastrophe occurred. The main reason for this accident was that the reactor was brought into a hazardous and uncontrollable mode in which the positive steam reactivity effect became predominant. Because of this the reactor lost its trait of "self-regulation" and stability, and the operator and automation equipment were no longer able to manage it.

In view of this, it is above all necessary to answer the fundamental question of whether the respective departments that created and are operating RBMK-type reactors are taking sufficient measures so as to prevent the Chernobyl situation from being repeated? One can hardly provide an unequivocal answer. I think, however, that attention must be paid to the following forces.

The very contradictory information that exists makes it very difficult to draw any conclusion regarding the degree to which it has really been possible to reduce the positive steam reactivity effect. Although designers insist that the positive steam reactivity effect can no longer become predominant, only comprehensive experimental

research on the dynamics of reactors in different operating modes can answer this question fully. If such research is already being conducted, the results must be presented for open discussion.

Speaking of automatic control, monitoring, and protection systems, it must be noted that they were created in times when the opinion that RBMK-type reactors could not lose their property of "self-regulation" predominated. In view of this, the systems use very simple control and monitoring principles, and they do not afford the possibility of making quick changes in control laws to allow for a reactor's ongoing dynamic properties. For this reason, in rapidly developing situations, an operator is subjected to a great nervous and emotional load, and his options are limited....

Based on the aforementioned, I cannot agree that the problems of the safe operation of RBMK-type reactors will be solved by taking such additional measures as increasing the "reactivity margin" and the speed at which the rods of the protection system are introduced. Like other AES with RBMK reactors, the Ignalina AES cannot be operated safely without a modern and reliable process control and monitoring system and a system for online diagnosis of the technical condition of its equipment. Also needed are modern information support systems for operators that would help in making correct decisions in complicated situations and thereby make it possible to prevent catastrophic consequences.

It should be noted that an automatic control system based on modern computers was already supposed to be functioning at the Ignalina AES when the first power-generating unit was started up. The system is still not completely finished, however. In essence it is only performing an information-gathering function. The matters of improving and developing it have been left to the departments that created the Ignalina AES. Most of the effort in the country is currently being directed toward creating modern automatic control and information support systems for operators at those AES at which water-moderated, water-cooled [VVER]-type reactors are operated. Toward this end, a state scientific-engineering program has been created, specialists from CEMA member countries have been involved in scientific research and design works, and developments are being based on the latest computer technology.

The strange position that domestic departments have taken with regard to AES with VVER reactors is, without a doubt, due to the fact that, in accordance with one of the scenarios of the USSR Power Generation Program, beginning in 1995, power-generating units with RBMK reactors are slated to be taken out of service until this type of AES is completely shut down in 2005. Is not it therefore inadvisable to invest resources and intelligence in creating comparatively expensive systems that are intended to guarantee the safety of unpromising reactors?

In view of this, the republic's legislature should demand that the union departments provide the No. 1 and No. 2 power-generating units of the Ignalina AES with modern online diagnostic, automatic control, and operator information support systems right away. Since designers insist that the Ignalina AES has been provided with the best systems in the Soviet Union, we must look for possible ways of acquiring the engineering and technology for control and diagnostic systems that have been developed by foreign firms.

Obviously, the legislature of the Lithuanian SSR should create its own expert commission that would include all of the republic's scholars and specialists who are competent to assess the engineering decisions and means for implementing them that have been proposed by the designers of the Ignalina AES. They should be equal partners in the scientific discussions. Only then can there be hope of finding the best and most well founded alternative. This is especially important when creating neutral commissions in which experts from foreign countries participate. The main tasks of a republic expert institution should be to constantly analyze and monitor the operation of the Ignalina AES and matters related to improving its systems and to prepare scientifically well founded proposals for the republic's legislature.

What alternative is there to the No. 3 power-generating unit at the Ignalina AES? Power engineers predict that by 1995 and perhaps earlier we will feel a shortage of electric power. I think, however, that today one can hardly assess the existing forecasts unequivocally. Indeed, under conditions of the republic's economic sovereignty, we will be able to change the existing structure of industry, rejecting production requiring a great deal of power and raw materials and switching to science-intensive production that would be competitive on the world market. If no suitable alternative to nuclear power generation is found by the time we experience a shortage of electric power, we will have to think about low-power (100,000 to 150,000 kW), compact (so-called modular) reactors with passive protection. The first publications dealing with these reactors have already appeared in the world press. All currently operating reactors that are cooled by water or gas should be furnished with external safety systems. When they fail, however, a more or less hazardous accident may occur. In the aforementioned modular reactors, self-protective properties are embedded in the reactor's very physical structure.

Nuclear Fuel Storage Facility Questioned

51000001z Moscow TRUD in Russian 30 Mar 89 p 4

[Article by G. Klyucherov: "A Secret Facility?"]

[Text] "In the outskirts of Lvov, in Bryukhovichi Forest, there is a facility surrounded by a solid fence. The facility is definitely secret, though there is a sign on the fence nonetheless. It does not say much: 'The Lvov Special Combine of PZRO.' Those who live in adjacent villages

have told me that this is a warehouse for storing radioactive substances. Cannot we remove the shroud of secrecy from this facility so that people will not have to guess?"

[signed] S. Lenda, Lvov

We can remove the shroud. The confusing abbreviation [PZRO] is expanded as "Station for the Burial of Radioactive Waste." However, the author of the letter and other readers should not get the impression that this is a secret location of some kind where processed materials are brought from nuclear power stations in hiding from the populace. Nothing of the kind; it is much simpler than that.

At present, there are numerous devices, such as gamma-ray flaw detectors, densimeters, fire alarms, and many others which contain radioactive isotopes. Of course, they pose absolutely no danger to the health of those working with them. However, when the service life of a device runs out, the issue of disposing of it arises. You cannot toss it onto an ordinary trash heap. This is why such stations are built together with their burial grounds.

One more example. There is a special laundry facility at the Lvov Special Combine of the PRZO. It is used by institutes, clinics, and even regular hospitals in which people deal with radioactive substances. After all, they cannot take their service clothing to a regular laundry. This is why there is a decontamination section here. Incidentally, this is where the clothing of those who arrived in Lvov from Chernobyl was washed.

I asked the combine director G. Chernyshevich to show me his "secret" installation. In the compound, I made the point of looking at the dosimeter. It read 0.012 milliroentgen. This is a usual background norm. However, this did not seem enough for me: I asked that the meter be taken close to the vessels where buried radioactive devices are kept. The number was the same—the arrow sort of froze in place.

Says G. Chernyshevich: "When a decision was made on where to build the combine a special effort was made to find a higher place; we made sure that a clay soil is around, and that the water table lies deep—in a word, all rules were strictly complied with. Besides, everything is stored in concrete vessels, and concrete is poured on top. We have to overemphasize it at times, but we are convinced that this location is entirely safe. By the way, the fruits of trees which grow in the compound, as well as berries, pose no danger."

As I was listening to Grigoriy Antonovich, a thought occurred to me unwittingly: quite recently, we liked to create various secrets artificially which brought about the mistrust of people, and gave rise to irresponsibility on the part of those who were obligated to preserve our life and health. One more thing: the time has long come to produce personal dosimeters. Having them, one always feels more confident. At any rate, there won't be any fabrications and imaginary fears.

Experts Examine Power Plant for Safety

LD0206053889 Moscow TASS International Service in Russian 1209 GMT 1 Jun 89

[Text] Moscow, 1 June [TASS]—A group of IAEA [International Atomic Energy Authority] experts have to resolve the fate of the construction of Gorkiy Atomic Heat and Power Plant, Sergey Yermakov, member of staff of the Center of Public Information on Atomic Energy, said. He told a TASS correspondent that the group of specialists engaged in the IAEA's independent international expert examination had already started work. The group includes representatives of this international organization and experts invited from Great Britain, Spain, Canada, the United States, France, The FRG, and Sweden. The delegation is headed by Yevgeniy Yaremi, the well-known Canadian specialist in the sphere of nuclear power safety.

Yermakov said that the expert examination is being conducted on Soviet request. The fate of the atomic heat and power plant will depend on the results of the examination, which will be published. In the future, such checks on new and existing Soviet stations will be conducted constantly.

As far as the present expert examination is concerned, Yermakov said that it is an unprecedented case. The IAEA has never before appointed a commission for an expert examination of installations under construction—so far this has been done with only atomic power plants in operation. The experts will comprehensively analyze the safety aspects—including questions of design, construction, equipment acquisition, and staff training. In its first stage, the expert examination—which will last until mid-June—will analyze the design safety of the plant. Then the IAEA specialists will start direct work at the atomic heat and power plant. The second stage—through August—envisages a direct expert examination of the plant's safety. The standard of construction and installation work will be studied; and the correctness of the choice of site for construction will be examined, as will the observance of sanitary norms and the station's effect on the environment.

Decontamination Devices Urged for Chernobyl

PM0706152389 Moscow SOVETSKAYA ROSSIYA (First Edition) in Russian 7 Jun 89 p 1

[Letter from physicist Yu. Brovko under "From the Mailbag" rubric: "There Is the Following Method"]

[Text] Moscow—As is well known, following the accident at Chernobyl hundreds of thousands of people were exposed to radiation. The figure today in Belorussia alone is cited at 500,000. Serious concern has been voiced at the Congress of USSR People's Deputies over

the current situation and a proposal was made to resettle the victims. I am not undertaking to judge how this question is to be solved. But I am sure that by no means all capacities have been utilized to decontaminate the area, sources of contamination, and people.

In this connection I recalled a report that everyone has forgotten for some reason. There is, it transpires, a fundamentally new method of decontamination. It was created 27 years ago and enables the consequences of radioactive contamination of large areas to be eliminated quite rapidly. This report was published in the NTO USSR journal (1962 No 8, page 54). I will quote it in its entirety:

"According to Yugoslavia's POLITIKA a group of staffers at the Institute for the Application of Nuclear Energy in Agriculture have succeeded under experimental conditions in using ultrasound to completely remove radioactivity from the surface of glass, polyvinyl, aluminum, and resin. Ultrasound with a frequency of 20-40 kHz is used to decontaminate inorganic materials.

I believe that given today's possibilities this solution could be implemented and similar decontamination installations put into use in 3-5 months.

Of course, I do not have the slightest thing to do with medicine, but I venture nevertheless to make a proposal: Could people who have been exposed to radiation not be decontaminated using ultrasound? Of course, the instruments will still not work fast, but people are being affected every day. Notably because they drink contaminated water. In this connection let me cite another report from my notes of the time. In this case it is a Japanese press report:

"Scientists from Shizuoka University have prepared a special paper that absorbs radioactivity. This paper can be used to filter rain water. It absorbs 85 percent of the strontium-90 and 93 percent cesium-137 in it."

Would it not be worth buying this paper from Japan and decontaminating just the drinking water? This would enable us to drastically reduce the accumulation of radioactivity in the organism.

IAEA Experts Evaluate Gorkiy Nuclear Station

18220146n Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Jun 89 p 4

[Interview with (Ye. Yaremi), Canadian specialist in the area of atomic energy safety, by S. Turanov; date and place not given]

[Text] **For many months thousand of Gorkiy residents have been living in a state of tense anticipation: How will the problem of the nuclear heating plant (AST) that is being constructed literally next to the city be resolved? This question was raised by a group of scientists on the pages of our newspaper in an article entitled "Atomic Boilers: Doubts at the Start" (SOTSIALISTICHESKAYA INDUSTRIYA, 26 March of this year). In particular it suggests subjecting the very idea of the AST to a careful expert evaluation, including relying on foreign experience.**

A couple of days ago a group of experts of the International Atomic Energy Agency under the United Nations (IAEA) arrived in the Soviet Union to conduct an international independent expert evaluation of the Gorkiy Nuclear Heating Plant. The problem it will have to deal with is discussed by the group's leader (Ye. Yaremi), an eminent Canadian specialist in the area of nuclear energy safety:

[(Yaremi)] In many countries the public is against further development of nuclear energy. But today people are bothered by more than the threat of an accident and the effects of radiation on the health. In recent years a great deal of concern has been caused by the deterioration of the ecological situation because of the utilization of traditional energy sources—for example, the burning of organic fuel.

One should say that the attitude toward the problem depends largely on the energy bearers one country or another has at its disposal. For instance, in France or Japan there are no alternatives to nuclear stations for producing electric energy. Unless, of course, they resort to importing coal or oil. Therefore, their decision in favor of nuclear energy was largely linked to the economic and political aspects—they do not want to be dependent on other countries.

[Turanov] How does the IAEA conduct an expert evaluation of the safety of nuclear stations?

[(Yaremi)] A couple of years ago the main form of our agency's activity was the exchange of technical information on nuclear energy. We gave help on specific problems only to developing countries. But even this work, as a rule, was performed by one or two specialists.

About 5 years ago we began to send groups of experts—the so-called "Osart" groups—to test the operational safety of the plants. Each of them includes approximately 15 highly qualified specialists. They usually spend up to 3 weeks studying a specific AES [nuclear energy plant]. Such a group, for example, went last year to the Rovenskaya AES. At the same time we are expanding the scope of the services we offer—we are not only examining concepts and technical solutions but also investigating construction designs of the station and evaluating the quality of the design requirements. This is the formula used for evaluating the Gorkiy plant.

[Turanov] Who was the initiator of it? How is the evaluation going?

[(Yaremi)] A group of 16 IAEA experts have arrived at the invitation of the Soviet Union. The first stage of the evaluation is now in progress, and the second will take place in August. The result of our work will be a substantiated evaluation of the plant's safety.

One must note the completely free exchange of information that is taking place between our group and Soviet specialists. Even before we arrived in your country we received documentation translated into English. During our conversations with dozens of Soviet experts we asked for additional information. It was always given to us.

[Turanov] In the current stage of the evaluation have you developed any opinion of the safety of the Gorkiy "atomic boiler"?

[(Yaremi)] As of the present moment I can only say that I can see no reason why the plant should not be put into operation.

[Turanov] Is the IAEA planning evaluations of other nuclear plants in the Soviet Union?

[(Yaremi)] As far as I know, there has been a request to conduct an analysis of the safety of the Ignalinskaya AES in Lithuania.

Kursk Nuclear Power Station Accident Described

PM1506104389 Moscow IZVESTIYA (Morning Edition) in Russian 13 Jun 89 p 2

[Report by State Committee for the Supervision of Safe Working Practices in the Atomic Power Industry on Nuclear Power Stations' Work: "Nuclear Power Stations: Events in May"]

[Text] Some 44 power units were in operation. There were five unscheduled power unit shutdowns: one at the Kalinin Nuclear Power Station [AES], one at the Chernobyl AES, one at the Balakovo AES, and two at the Kursk AES.

Personnel were to blame for two shutdowns, one was due to design defects, and two were due to equipment malfunction.

The radiation situation at the nuclear power stations and in the monitored areas by and large does not exceed the levels laid down for normal operations. There was a breach of radiation security at the Kursk AES when a small quantity of radioactive liquid leaked into the soil outside the territory of the AES.

At the Kursk AES the transportation of spent fuel in containers which were discovered to be defective was temporarily prohibited.

No personnel were exposed to excessive radiation.

There follows a commentary on the data.

IZVESTIYA (no 126) began publication of monthly reports on AES events. The editorial office receives them from the State Committee for the Supervision of Safe Working Practices in the Atomic Power Industry. Our correspondent asked the committee's deputy chairman, N. Shteynberg, to comment on the situation.

[Correspondent] Nikolay Aleksandrovich, specialists have talked a lot about the potential ecological advantages of nuclear power units. But that is true only until there is an accident. And, anyway, does the present level of knowledge and technology ensure an acceptable level of nuclear power station safety and the development of nuclear power in the next few decades?

[Shteynberg] My answer to this question is: Yes, in principle. My optimism is based on our experience and the experience of foreign countries developing nuclear power (the United States, France, Britain, the FRG, and others). The modern technology and infrastructure make it possible to guarantee an adequate level of safety. The experts have a different problem today—how to convince the public of this...

[Correspondent] Fine, in principle, as you yourself said. But can our present-day AES's meet this modern safety level?

[Shteynberg] Here, unfortunately, I cannot answer absolutely in the affirmative. The thing is that there are 10 or so first-generation power units, built in the sixties and seventies, operating in the country. It has been decided to rebuild [rekonstruktsiya] these units, the work to be completed in 1992-94. Such modernization is very costly. But it must be done. And we hope that the aforementioned measures will make it possible to significantly narrow the gap between the required and actual safety level at old AES's.

[Correspondent] Let us return to the report published today on the work of AES's in May. Could you comment please on the events at the Kursk AES. What actually happened there?

[Shteynberg] On 10 May at the Kursk AES radioactive contamination of railroad tracks inside and near the station was recorded over a total area of not more than 30 square meters. The contamination resulted from a trickle of radioactive water through the lid seal of a container for transporting spent nuclear fuel. It was due to bad container design and insufficient care on the part of personnel when closing it. As a result of timely measures the leak was eliminated and the contaminated area of track was decontaminated until a normal background reading was achieved.

[Correspondent] You came to the State Committee for the Supervision of Safe Working Practices in the Atomic Power Industry from the Chernobyl AES, from the post

of chief engineer, which you occupied in the postaccident period. So my last question is: What is the current situation at the Chernobyl AES and does it justify the continuing operation of this notorious station?

[Shteynberg] Work at the Chernobyl AES is proceeding in accordance with regulations and instructions. Of course, it is more difficult working there than at other stations. This is due to everyday problems, the regular change of personnel, and the great public interest in the station, both at home and abroad. It is also highly stressful, due to the fact that the AES personnel were made to bear the entire responsibility for the tragedy. But that is not quite the case...

As for the question of the need to continue work at the Chernobyl AES, it is a question for the country's planning organs to answer—where do you find another source of that size immediately? I am talking about 3 million kilowatts! Either you have to close down some plants and leave settlements and villages without power, or continue to operate the station, while, naturally, observing the rigorous safety norms.

Data on 1957 South Urals AES Accident Declassified

LD2006170689 Moscow Domestic Service in Russian 1500 GMT 20 Jun 89

[Text] Data about the accident that took place near the Urals town of Kasli in 1957 have been declassified. It was discussed at a news conference in connection with the forthcoming construction in those localities of an atomic power station.

A defense enterprise in the South Urals was built during the course of work to create a nuclear shield for the country. Due to a lack of essential experience at that time, individual areas were polluted. In September 1957, a chemical explosion took place which destroyed a tank used for keeping wastes containing radioactive elements. From their fallout, radioactive traces formed on the ground. The discharge came to about 2 million curies of radioactive elements. In Chernobyl, 50 million curies were discharged. Nobody died during the accident. More than 10,000 people were resettled within a short period of time from the polluted district. The incident was not talked about earlier since the matter concerned a defense enterprise. By 1978, as a result of the measures that had been taken, it was possible to renew economic activity on 80 percent of the area that had been affected by radiation, while a reserve was created on the remaining area.

The site for the construction of the south Urals [Yuzhno-Uralsko] AES [Nuclear Electric Power Station] was not selected by chance. Since 1957, certain reservoirs here have been quite polluted. By taking out water from them and evaporating it, the AES will in this way clean them up. Apart from that, there are good specialists in the region who are capable of ensuring the efficient work of the station.

At present, an independent experts commission is at work in Chelyabinsk Oblast to thoroughly appraise the draft for the AES and the degree of security for the construction of the station in those parts. A public opinion poll is being conducted. All of this should resolve the fate of the atomic power station in the South Urals.

AUSTRIA

Environmentalists Denied Entry to CSSR

AU1406202789 Vienna WIENER ZEITUNG in German 14 Jun 89 p 1

[APA report: "CSSR Border Officials Deny Entry; Protest Against Temelin Frustrated"]

[Excerpt] Linz—A protest by Austrians against the Temelin Nuclear Power Plant, which is under construction, was partly frustrated yesterday.

Opponents of the power plant, which is situated only a few kilometers north of the Austrian border, wanted to enter the CSSR at the Wullowitz checkpoint in Upper Austria to protest against the construction at that location. "For technical reasons," the border officials refused to issue visas for the persons who wanted to enter the country on short notice. Only a few Austrian deputies were permitted to enter the country; they wanted "to protest against Temelin" in the CSSR and "talk to the population." [passage omitted]

FEDERAL REPUBLIC OF GERMANY

1989 Budget of Karlsruhe Nuclear Research Center

MI890188 Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German 27 Jan 89 pp 6-8

[Text] The 1989 Program Budget presents the Karlsruhe Nuclear Research Center's new medium-term tasks and financial plan for the 1989-92 period. The center's overall budget currently totals some DM737 million. This also includes continuing financing for Karlsruhe's share of joint projects such as the Laue-Langevin Institute in Grenoble, and for project management costs and special funding needs which altogether total DM94 million. After deducting the center's own revenues of about DM124 million, this leaves government subsidies to the center of DM613 million.

The current program budget perpetuates changes in the center's operational structure that have been introduced since the beginning of this decade. Individual areas of operational emphasis are broken down as follows:

Practical fast-breeder technology continues to be a goal of the FRG's research policy. The technical feasibility of the fast breeder and the resulting savings of uranium have been proven scientifically. Its approval and political acceptability in the FRG, however, is still in question. Further wide-scale development work is necessary to close the fuel cycle. A major area of emphasis in Karlsruhe's current program is safety research, which focuses on both the removal of unused heat by natural convection and on the complex issue of nuclear fusion waste. This work is intended for large fast-breeder reactors, especially the corresponding European Community project. Combustion rod and materials research is being reduced and partially turned over to industry. Such research is particularly important for the efficiency of the breeder reactor.

Reconditioning burned-out combustion rods is a basic element of the German supply concept and cannot be ignored in the fast breeder reactor's fuel cycle. The reconditioning and waste treatment project will therefore continue to have a high priority in the future, especially since Karlsruhe is the only place in the FRG where such comprehensive research and development work is conducted. Work on advanced fuels will increase in the coming years. The development and testing of electrolytic procedures to simplify processes and reduce waste will also remain very important for reconditioning in the future. An important goal has been reached in the field of waste treatment with the completion of the PAMELA facilities for glazing highly active waste solutions in Mol, Belgium. Improving the process and increasing product control are in the forefront at Mol.

Regardless of whether reconditioning or direct final storage of the combustion rods is chosen as the disposal concept, the need for final storage of radioactive wastes remains crucial. Karlsruhe's waste operations are coordinated with the Radiation and Environmental Research Company in Neuherberg. For its part, Karlsruhe Center focuses on the "related field" of the ultimate storage containers containing the product, packaging, and buffer material which includes the mutual reaction with the adjacent storage medium. Emphasis is placed on testing the safety of final storage areas.

The development of the separation-jet process for enriching uranium 235 has been technically completed. Ongoing activities that will be finished by the end of 1989 essentially involve the completion of remaining contractual obligations to Brazil.

The Nuclear Fusion Project gathers together work being done on fusion with magnetic containment. The project concentrates on the technical problems of this type of reactor. In particular, this includes the physics and technology of the so-called blanket in which fusion energy is transformed into heat and where the nuclear fuel tritium is bred. The project examines the acceptability of such installations, the choice of radiation-resistance materials, and the question of how to handle radioactive materials created in nuclear fusion, especially the nuclear fuel tritium. The center not only has comprehensive skills in all of these fields, but also works in specialized fields such as constructing superconductor magnets and developing heating technology for plasma. An agreement has thus been reached with the Ministry for Research and Technology that assigns all development of fusion reactor technology in the FRG to the Karlsruhe Nuclear research Center.

Close coordination between developments in technical and plasma physics has been ensured by the creation of a development team that includes the Max Planck Institute for Plasma Physics in Garching.

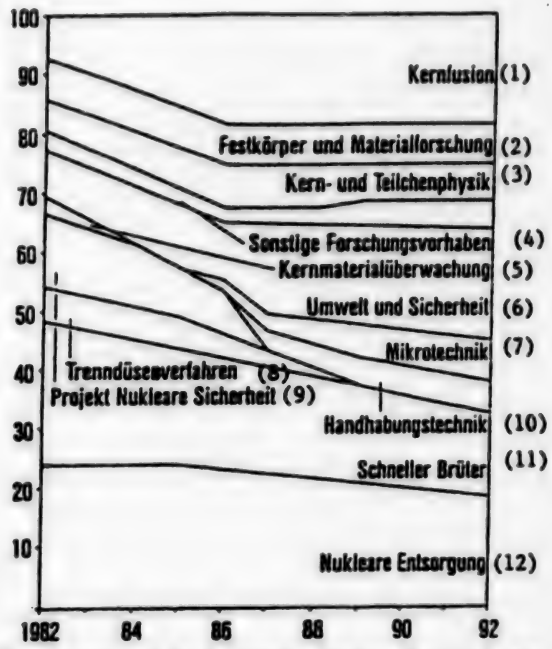
All European work on nuclear fusion is coordinated by Euratom. Thus Karlsruhe has signed an association agreement with the European Community that provides access to the European fusion technology program.

There are two aspects to the major emphasis placed on environment and safety. The first is organized as the project entitled "Controlling Hazardous Materials in the Environment." This project examines the effects of technology on mankind and on the natural environment. Procedures for dealing with environmental problems are also being developed for such purposes as waste treatment, reduction of hazardous-material emissions, preparation of drinking water, and treatment of waste water. Meanwhile, the behavior and spread of hazardous materials is being analyzed quantitatively and described with the latest computer models. Fundamental biological research focuses primarily on the effects of hazardous materials on genetic and cellular material. Karlsruhe's systems-analysis working groups are leaders in the technical assessment of environmental impact, as well as in risk analysis and the application of information systems to the environment.

The second aspect of the emphasis placed on environment and safety involves work on the safety of light water reactors. Until late 1986 these were organized by project because of the large-scale experiments that ran until that time. Currently, studies of the disposal of nuclear fusion waste and its consequences are being carried out as contributions to Phase B of the German risk study. Among other things, this includes the development of disturbance filters to reduce pressure in the reactor's safety containers.

The objective of the emphasis placed on solid-state and materials research is to develop materials for modern technology. At the moment, this primarily involves high-performance metals or compound materials such as superconductors, particularly the new high-temperature superconductors with liquid nitrogen cooling.

In the fields of nuclear and particle physics, the center uses its own major facilities, but also cooperates at the national and international level with technical universities and other research centers. In the forefront are two neutrino experiments which are currently being prepared with the Rutherford-Appleton Laboratory at its spallation source, within the framework of the international Gallex experiment in Italy. Meanwhile, testing is continuing to determine the feasibility of a high radiation experiment designed to completely identify the nature and origin of this high energy particle.



Development of the Karlsruhe Nuclear Research Center's Major Areas of Emphasis

Key:
1. Nuclear fusion
2. Solid-state and materials research
3. Nuclear and particle physics research
4. Other research projects
5. Nuclear material monitoring
6. Environment and safety
7. Microtechnology
8. Separation jet processes
9. Nuclear safety project
10. Operations technology
11. Fast breeders
12. Nuclear supply

In past years two new areas of emphasis were initiated which originated out of nuclear technology and which hold great promise for applications in other areas of technology. The microtechnology emphasis focuses on developing the so-called LIGA [expansion not provided] process, a combination of X-ray photolithography, galvanics, and plastic casting procedures to mass produce 3-dimensional microcomponents. In this case the R&D task consists primarily of producing mechanical elements and integrating them into electronic-mechanical systems using measurements derived from modern chip technology.

In the area of handling technology, methods are being developed for work in inaccessible or scarcely visible places or for work under difficult conditions. Available know-how in the disposal of nuclear materials and in data processing is being used. The objective is to have a balance of operator-controlled manipulations and program-controlled robot functions. Eventually, the operators of these systems should be assisted by advanced

procedures and components such as sensor-aided environment measurements to prevent collisions or knowledge-based systems guidance.

Special mention should also be made of the successful technology-transfer operations to medium-scale and smaller industry which the Karlsruhe Center has been conducting over the last 10 years. Unlike the major projects in which entire technology packages are developed in close collaboration with industry according to research policy objectives, technology transfer is concerned with the industrial use of discoveries that were made in major projects, but which are not exploited. The technical emphasis given to technology transfer takes advantage of the center's broad range of knowledge and experience.

The above graph shows how the trends in the Karlsruhe Nuclear Research Center's major areas of emphasis are changing over time.

The Karlsruhe Nuclear Research Center's program budget is available from the Nuclear Research Center Karlsruhe GmbH, 7500 Karlsruhe, Postfach 36 40, tel 07247-822861.

New Export Controls Cause Bureaucratic Chaos

36200175n Duesseldorf WIRTSCHAFTSWOCHE in German 28 Apr 89 pp 35, 38

[Article by Gabor Steingart: "Bonn's Red Tape"]

[Text] Bonn has stiffened export controls through ordinances—and has thus provided additional confusion for authorities and industry. The result: Bureaucracy is booming, and exports come to a standstill.

There is no sign of the proverbial German civil service coziness at the Eschborn Federal Office for Industry:

—Room 726: Heinz Vetter can hardly move about his office any more—the applications for chemical exports pave the floor. Vetter's chronology: "Transnuclear was unpleasant. Since Imhausen it is unbearable."

—Room 611: The telephone in Helmut Stader's office no longer stops ringing. Businessmen want to have the latest export guidelines explained. On the wall hangs a cardboard sign: "Telephone-Terror Center."

—Room 524: Outside the door, transport agents and factory couriers get flat feet from waiting. They are waiting for licenses for urgent exports. But without a week's prior application, nothing moves any more.

The cause of the civil servants' stress is the export control tightened by the Bonn Cabinet—the consequence of the participation of German firms in the construction of the Libyan poison gas installation in Rabta. With the aid of ordinances, which became effective on 1 April, Bonn has hastily polished up the foreign trade law in order to compensate for weeks of inactivity during the affair. But the result of this rush of activity is total confusion: Without a certificate of nonobjection from Eschborn, customs officials let hardly any goods pass the border any more. The number of so-called negative certificates has tripled in the last weeks. Red tape is booming, and exports are at a standstill.

Among the losers even now are the machine and plant construction industries. The prohibition of all exports to Libya which are in connection "with the construction or operation of a poison gas plant in the desert country" serves for politicians' pithy speeches—but not for the practical work of control officers. The result: Normal business with the desert country now proceeds at a snail's pace only since the "Lex Rabta" (civil service jargon). Nervous customs officials even stopped deliveries of spare parts for Libyan plants desalinizing sea water. Wolfgang Kuehnel of the Association of German Machine and Plant Construction [VDMA] complains: "Delivery periods elapse—our enterprises are practically forced into breach of contract." Yet, during the last 10 years, Libya was export country No 4 for German builders of large-scale plants. Since 1979, Al-Qadhdhafi placed orders from FRG plants in the amount of DM5.9 billion.

Kuehnel's reproach to the Minister for Economics: "Hausmann has written everything into his ordinance—without saying anything." So oddities are inevitable—even for enterprises not trading with Libya. Thus, customs recently delayed an export shipment of the Frankenthal KSB AG, a manufacturer of pumps and fittings. The addressee was its own subsidiary—and not headquartered in Tripoli, but in Zurich. Guenther Mueller, manager of the industrial fittings sector, surmises: "The customs official had read somewhere that industrial fittings can also be part of a poison gas plant."

The second ordinance issued by the Cabinet also creates confusion: It now applies to all nonmembers of OECD the trade restrictions once developed for the East bloc regarding technology transfer.

The goal of this ordinance after the Libya experience, to impede also all other countries of the Third World from producing their own ABC [Nuclear, Biological, Chemical] weapons, is noble—its implementation is practically impossible. The Eschborn certifying officials are to check all shipments of installations, parts of installations or technical knowhow to see whether they are perhaps suitable for the construction of poison gas plants—and, if worst comes to worst, to prohibit their export.

But Bonn has concealed from the controllers which parts and bits are suitable for such a production. The export list D for chemical plants consists of only one sentence. A Haussmann staff member acknowledges shamefacedly: "That is actually not a list."

And no rapid redress is in sight: Because of "difficult classification problems," the officials in the Ministry for Economics haven't made progress in weeks. Yet the Bonn people have known about the gap in the list even before Imhausen. Staff members of the Federal Office for Trade and Industry [BAW] advocated more precise classification years ago. "This export list," wrote an Eschborn department head to then-Economics Minister Bangemann, "is not administrable."

Because Bonn nevertheless staged the stiffening [of controls], industry is exasperated. For Volker Schuermann, manager of the foreign trade sector at Hoechst AG, the resultant legal uncertainty is "something new in the foreign trade law." And VDMA staff member Kuehnel surmises: "The Bonn people were not concerned about effective control—they wanted the big show for Big Brother in Washington."

The SPD [Social Democratic Party of Germany] also criticizes that besides tons of paper, not much [else] gets moved by the new ordinances. Member of Parliament Norbert Gansel considers an excessive certification bureaucracy (BAW jargon: paper control) "of little effectiveness."

This armaments expert sees an alternative in a reform of penal law provisions in the foreign trade law: deterrence instead of paper control. Gansel would like to punish, not the nebulous "endangering of foreign relations" (as planned by the government), but, more concretely, "every infringement of FRG contracts under international law." Criminal prosecution would then have to be oriented according to international agreements, such as the banning of C weapons. Gansel's basic thought: "Industry must know what it can and cannot do. Every other case should not have to wait for a decision by civil servants."

Especially since the authorities are not prepared for the onrush of exporters. In its hectic pace, the Federal Government took the second step before the first—the ordinances are in effect, [but] trained personnel are lacking. True, at the Eschborn federal office, where only 70 controllers work at present, 60 new positions are to be established this year, and an additional 115 positions next year. But the planners did not take into account the domestic labor market. Qualified chemists and technicians cannot be had at this time for the meager salaries under the Federal Employees' Collective Salary Agreement.

The last position advertised nationwide by the Eschborn authority—the opening was for an electrical engineer—demonstrated abruptly how unrealistic the Bonn plans are: There was not a single applicant.

Bundestag Committee Discusses Illegal Arms Deals

AU1906091989 Hamburg DER SPIEGEL in German 19 Jun 89 p 17

[Text] The suspicion of the FRG Government that the MBB arms company was involved in illegal missile exports to Iraq, Egypt, and Argentina either directly or via its subsidiaries is being corroborated. Last Wednesday [14 June] at the session of the Bundestag Foreign Affairs Committee, Harald Schaefer, state minister in the Foreign Ministry, confidentially reported on numerous indications of illegal arms deals by the company from Ottobrunn. The anger about these machinations by MBB is also increasing in the Economics Ministry. In the meantime, the Economics Ministry is almost sure that MBB promised the Bonn authorities to withdraw from the sensitive deal, but fulfilled this promise only after secretly completing the incriminating deals. Therefore, some officials call for MBB to be deprived of its status of "reliability" which the Military Materiel Control Law requires of arms producers. However, this blow would not mean the end for the missile producers: As in the nuclear industry, the state's trust in the "reliability" of the company could quickly be reestablished if some leading managers were sacked.

FINLAND

Prime Minister Backs Nuclear Power

51002427 Helsinki HUFVUDSTADSBLADET in Swedish 6 May 89 p 10

[Article by FNB/Hbl: "Holkeri Advocates More Nuclear Power"]

[Text] Prime Minister Harri Holkeri (Conservative Party) believes that an expansion of nuclear power is a desirable energy policy solution in Finland. In an interview which he gave to LEHDISTON SANOMA-PALVELU, and which was published on Friday, Holkeri said that the existing government should be able to turn over the reins to its successor in such a condition that a decision on a fifth nuclear power plant in Finland is possible.

Yesterday Holkeri received a certain amount of support from Minister of Justice Matti Louekoski (Social Democrat), while Minister of Communications Pekka Vennamo (Rural Party) took a position very critical of the prime minister's statement. All the ministers contacted by HUFVUDSTADSBLADET, however, confirmed that this government cannot make any decision about the expansion of nuclear power.

In the interview Holkeri said that he is a supporter of nuclear power. He thereby became the second member of the current government who openly says that he wants an expansion of nuclear power. Previously, Minister of Trade and Industry Ilkka Suominen (Conservative Party) said that he "personally" believes that the best way to satisfy the growing need for electricity is to build a new nuclear power plant.

In its platform the government pledged not to make a decision about building a nuclear power plant during the current parliamentary election period. The decision on

the government's platform was made immediately following the accident at Chernobyl, and that situation was called "unfortunate" by Holkeri in the interview.

"Following the next election, meaning the parliamentary election of 1991, a decision must in any case be made. Then we can say no with open eyes, or as I hope, make a decision to build and provide for the nation's energy needs in the least polluting and most secure way," said Holkeri.

Holkeri also believes that the report delivered by the Energy Committee under the leadership of former Attorney General Kai Korte provides a usable basis for dealing with the impending urgent political decisions.

Energy Problems Difficult To Solve

"In any case, this government will not make a decision about a new nuclear power plant," said Minister of Defense Ole Norrback (Swedish People's Party) yesterday. And he added that it is going to be very difficult to solve the energy problems.

Assistant Secretary Ilkka Kanerva (Conservative Party) said that the prime minister's statement contained nothing new, and that Holkeri was just expressing his own views.

Minister of Social Affairs and Health Helena Pesola (Conservative Party) referred to the government's platform, while Minister of Finance Erkki Liikanen (Social Democrat) would not comment on the prime minister's statement because he had not seen it.

Minister of Justice Louekoski said that he personally favors nuclear power, but he stands by what the government's platform says—at least during the term of this government.

The most emphatic opposition came from Pekka Vennamo.

"Holkeri and Suominen can say what they want to, but the government will not take up the question. At least not as long as the Finnish Rural Party is a member of it," said Vennamo.

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